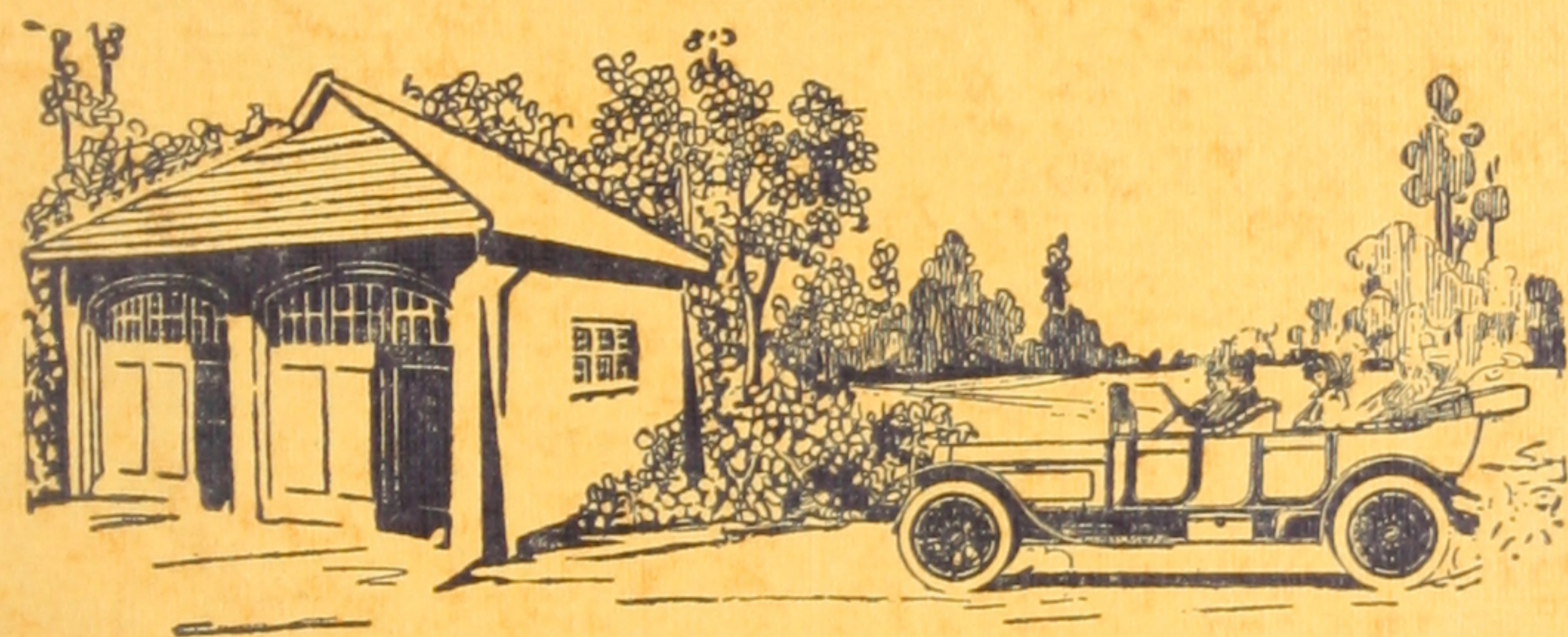


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Garage Door Equipment



Richards-Wilcox



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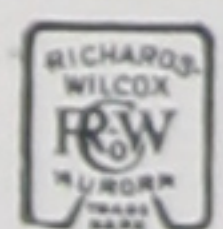


DOOR HANGERS, GRINDSTONES & HARDWARE SPECIALTIES



TO assist the architects in providing for the proper sliding door hangers in their garage work, we illustrate the Richards-Wilcox Ball-Bearing Trolley Hangers and show various possibilities of handling the sliding door proposition. We recommend that you specify by number the hangers designated for various sizes or weights of doors so as to insure the satisfaction for which you are striving.

Richards-Wilcox



MANUFACTURING CO.
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A HANGER FOR ANY DOOR THAT SLIDES.

The Garage Door Problem

THE HANGING OF FULL FRONT SLIDING DOORS ON SMALL GARAGES

How shall we hang the garage doors, and how keep out the weather? This has become a vexing question to many since the advent of the automobile bringing the garage with it.

The old fashioned hinged door is occasionally seen but should not be used as it is a constant source of annoyance, especially if the doors are large and the opening is nearly the full width of the building. A considerable space is required in which to swing the doors and when open, the doors are subject to winds blowing them back and forth with the consequent strains on the hinge fastenings and the door in general. Of course hooks may be provided to hold the doors open, but this requires extra time and effort and even though carefully attended to for a while, carelessness will eventually set in and the hooks will be neglected. Then again the principle itself of hanging large doors on hinges is wrong, as strains will be set up which will eventually cause the door to sag and get out of shape.

R-W RIGHT ANGLE DOOR HANGERS FOR SMALL GARAGES

We will consider first the most common type of private garage intended only for one car and with the opening in the center of the front wall. On this class, especially the smaller ones, it is frequently desirable to make the opening nearly the full width of the building, allowing only jamb space sufficient for the lap of the doors. This case is shown in Fig. 1 and is one which presents quite a difficulty to many builders as well as architects, but can be handled satisfactorily by using two doors with R-W right angle door hangers. With these fixtures, the doors when opened occupy positions along the side walls, as shown in dotted lines. Three runs of track are required for the door hangers, one of which is attached entirely across the inside of the front of building and extends into the wall 2 inches on each end. Another piece of track is attached to each side wall just above the first track and resting on top of it (Fig. 2) and with the front end extending into the wall 2 inches.

To erect these doors, first attach the hangers (which are made with an angle plate to fit over the corner of the door) to the doors. Single or two wheeled hangers are required for the meeting stiles of the doors and four wheel hangers are used on the back end of the door. While four wheel hangers might be desirable for both ends of the door, an inspection of Fig. 2-B, will show that this cannot be done because the wheels of both hangers projecting beyond the edge of the door would strike before the doors were entirely closed. The wheels cannot be set back farther from the edge of the door, due to the fact that the door would not clear the jamb in making the turn. Note interference shown in dotted lines at D, Fig. 2. The two wheel hangers run in the track across the opening and the four wheel hangers which are provided with extra long pendant bolts, run in the side tracks. Obviously

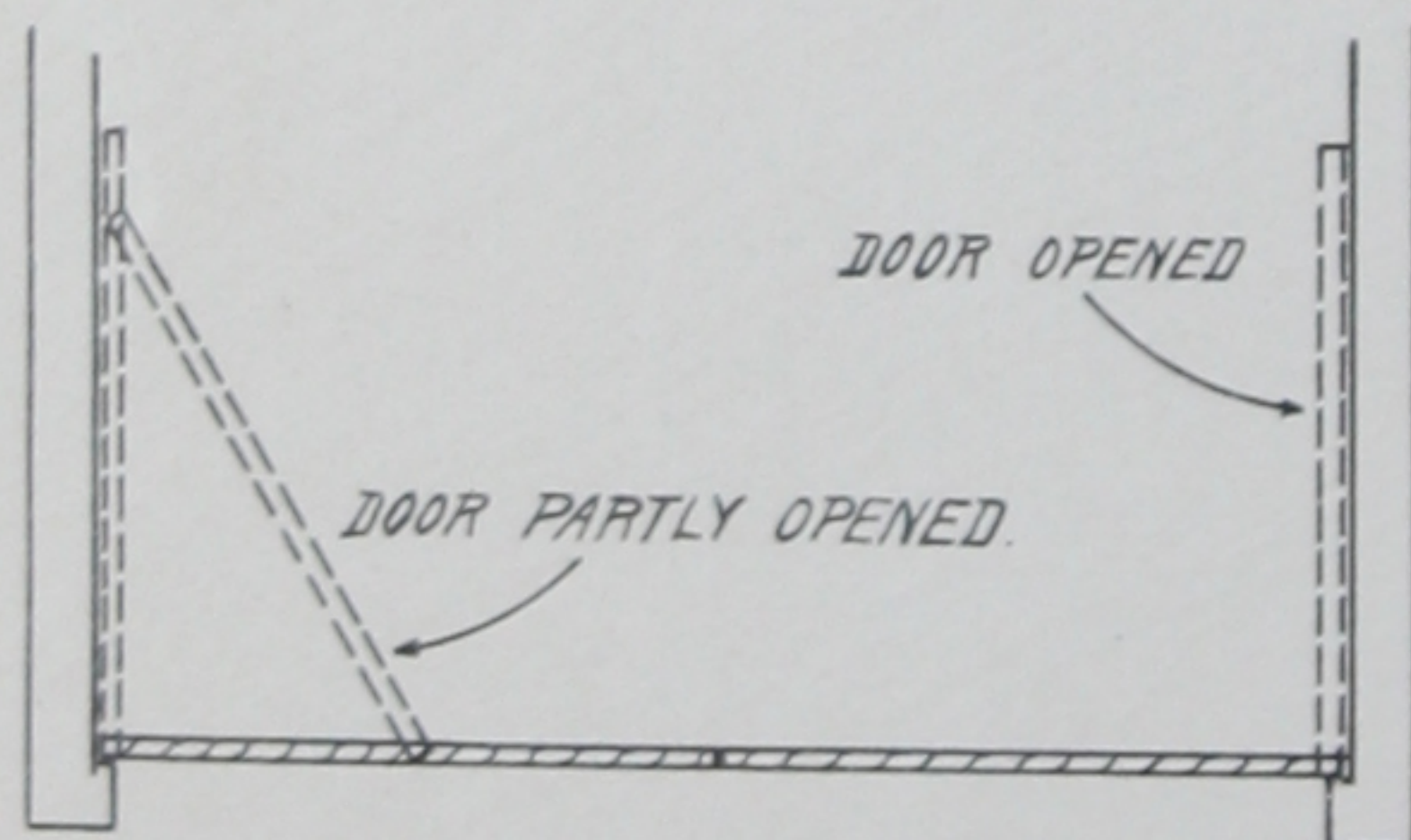


Fig. 1. Plan View of Right Angle Sliding Doors

the angle plates of the two-wheel hangers must be set into the door flush to permit the two doors to close tight, but the hanger plates for the back end of the door need not necessarily be flush.

Measure the distance "C" from the front edge of the door to the center of the pendant of the back hanger and lay off this distance on the front track, measuring each way from the center. Then with a hack saw cut two slots $\frac{1}{4}$ inch wide in the track, continuing them about $\frac{1}{4}$ inch beyond the center as shown in Fig. 2E. This is necessary as it is evident that in closing the door the long pendant of the rear hanger would strike against the side of this track before the door closed tight against the jamb. The front track for convenience in erecting should be in two pieces. Attach one piece to the front wall letting it extend into the side wall two inches and at the proper height to allow sufficient working space for doors and hangers. Next raise the doors, slip front or two wheel hangers of both doors into the track already erected and proceed to attach the remaining piece of front track. Swing doors around into the position they are to occupy over the opening and if the work has been properly done the pendants of rear hangers will enter the slots cut in the track. Slip the side tracks over the rear hangers, allowing the front end to rest on top of front track and to enter front wall 2

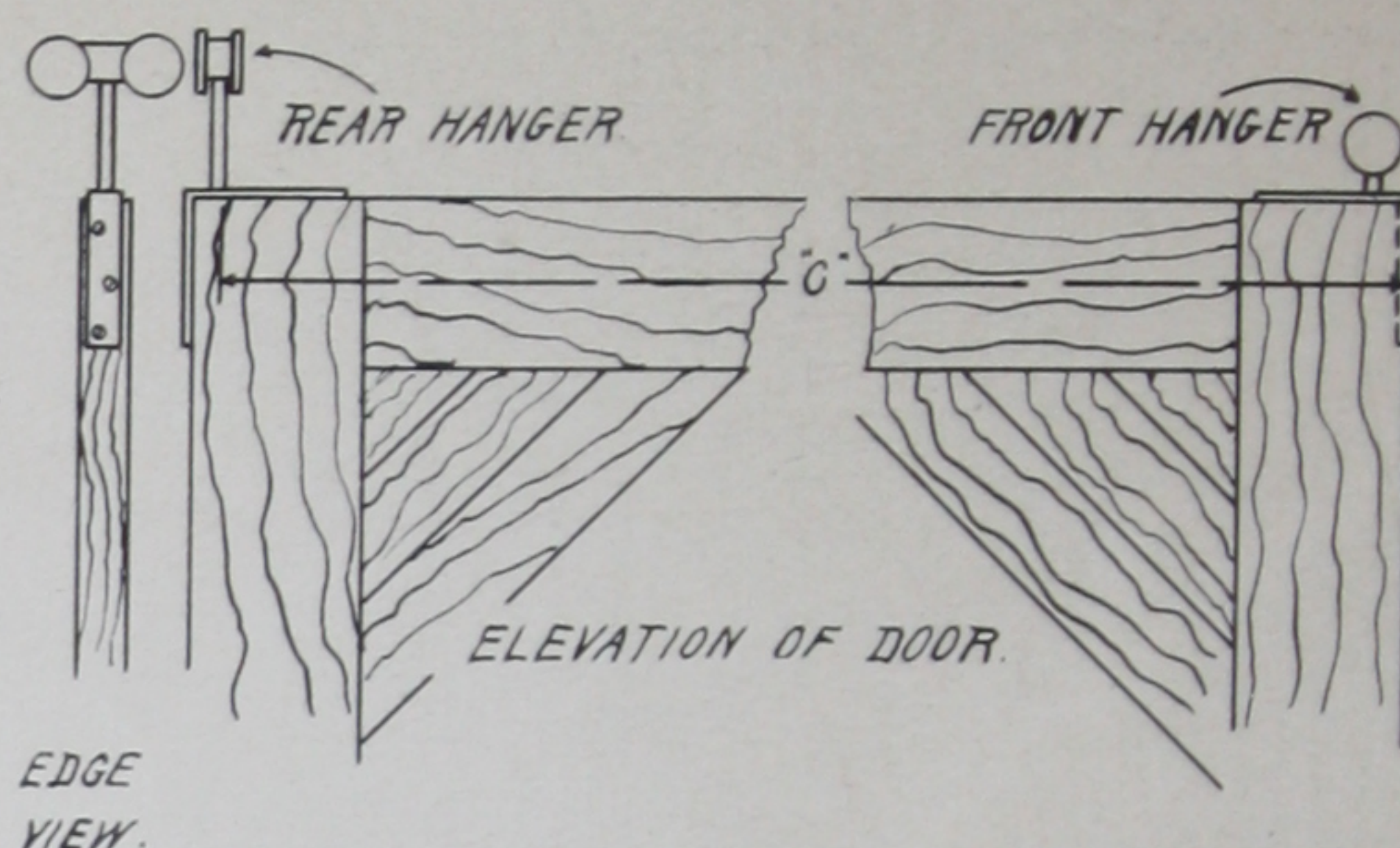


Fig. 2-B

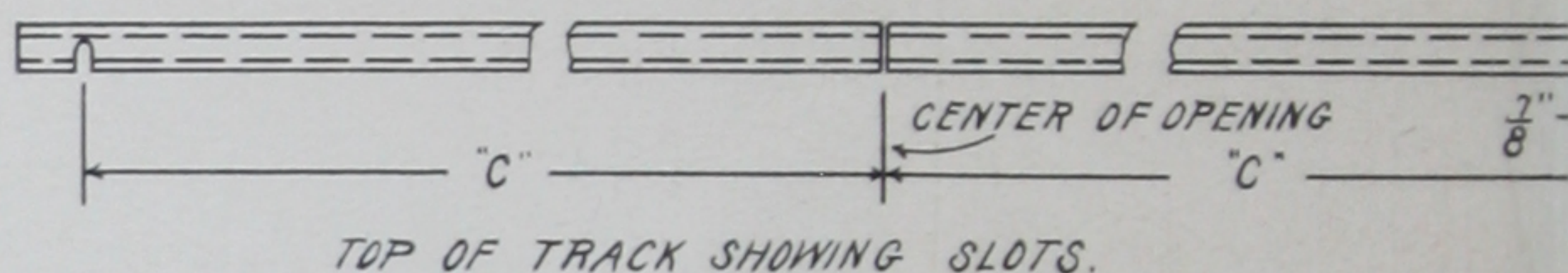


Fig. 2-E

inches. Attach to side wall with necessary brackets. The doors, after hangers are properly adjusted vertically, are ready for operation.

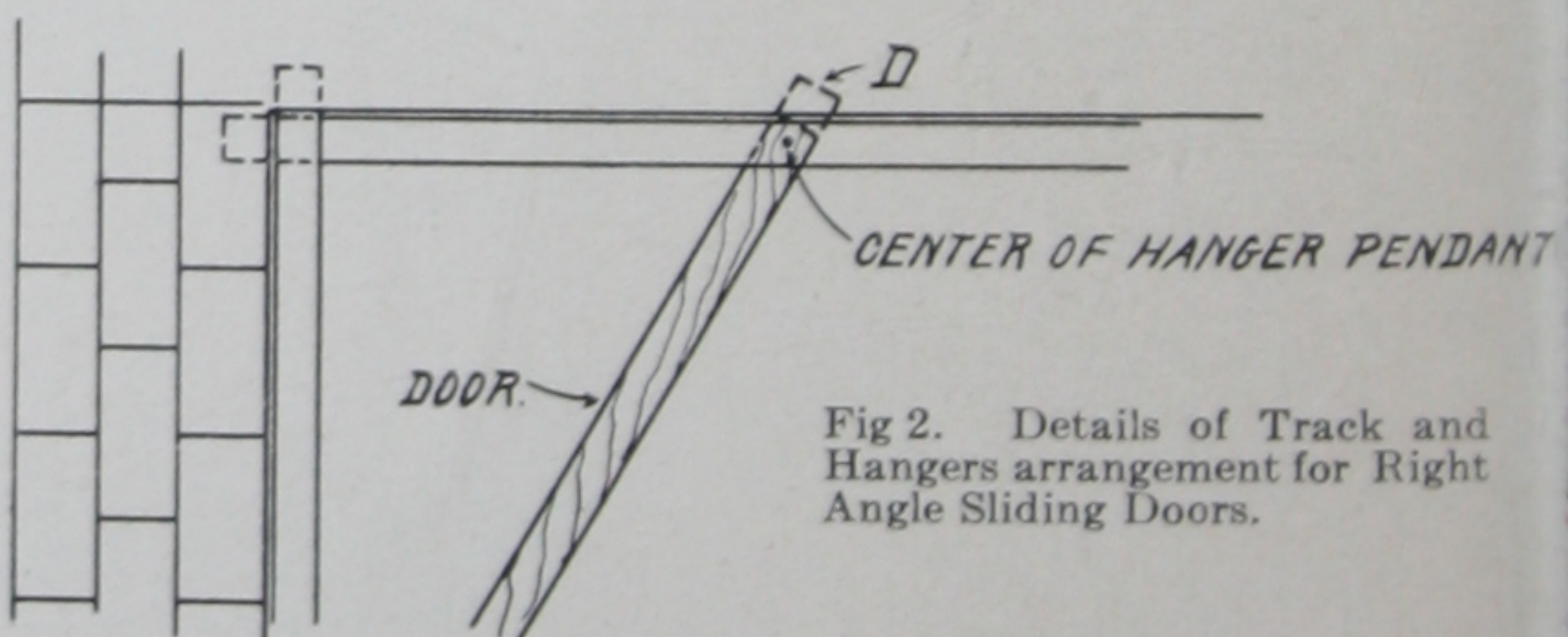
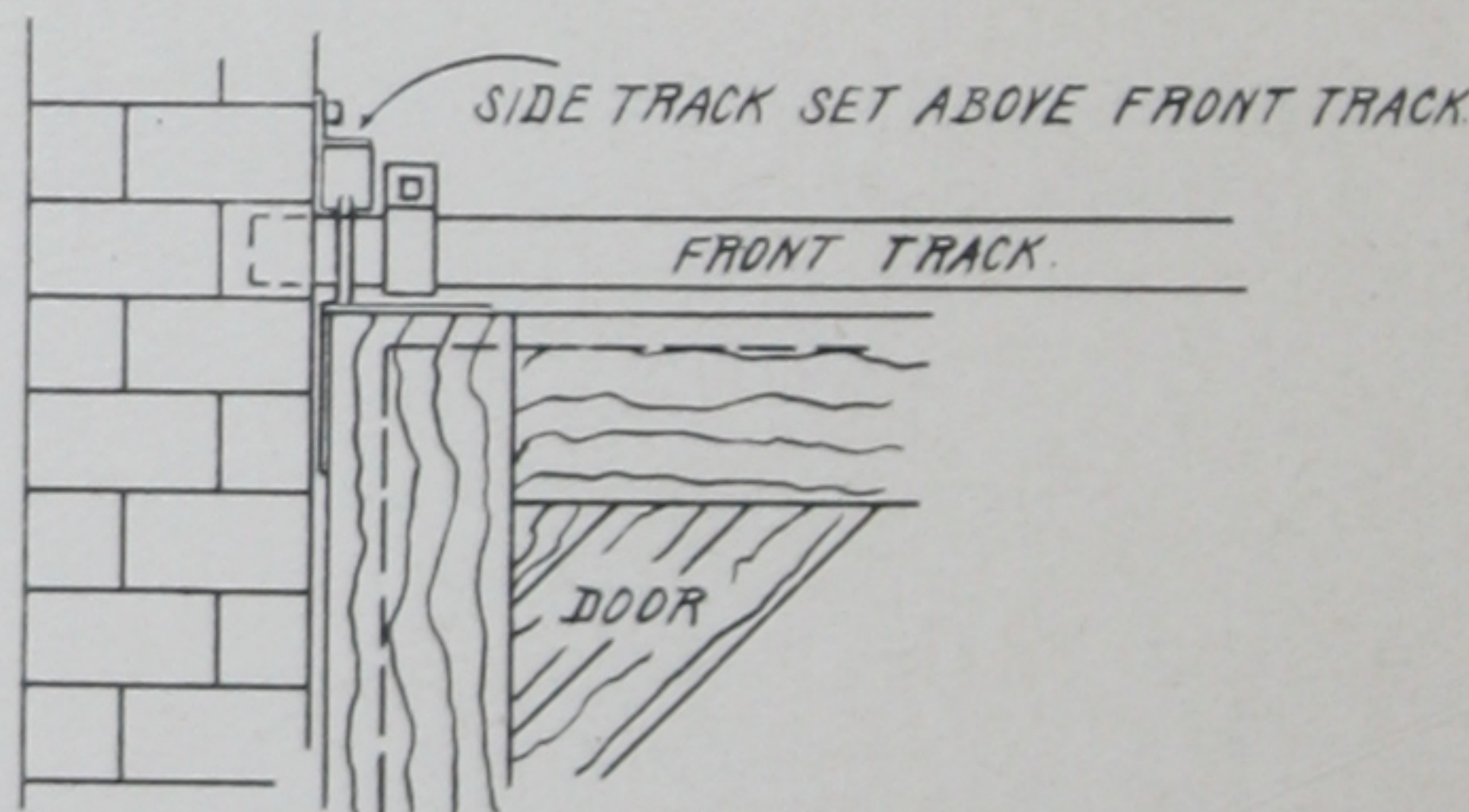
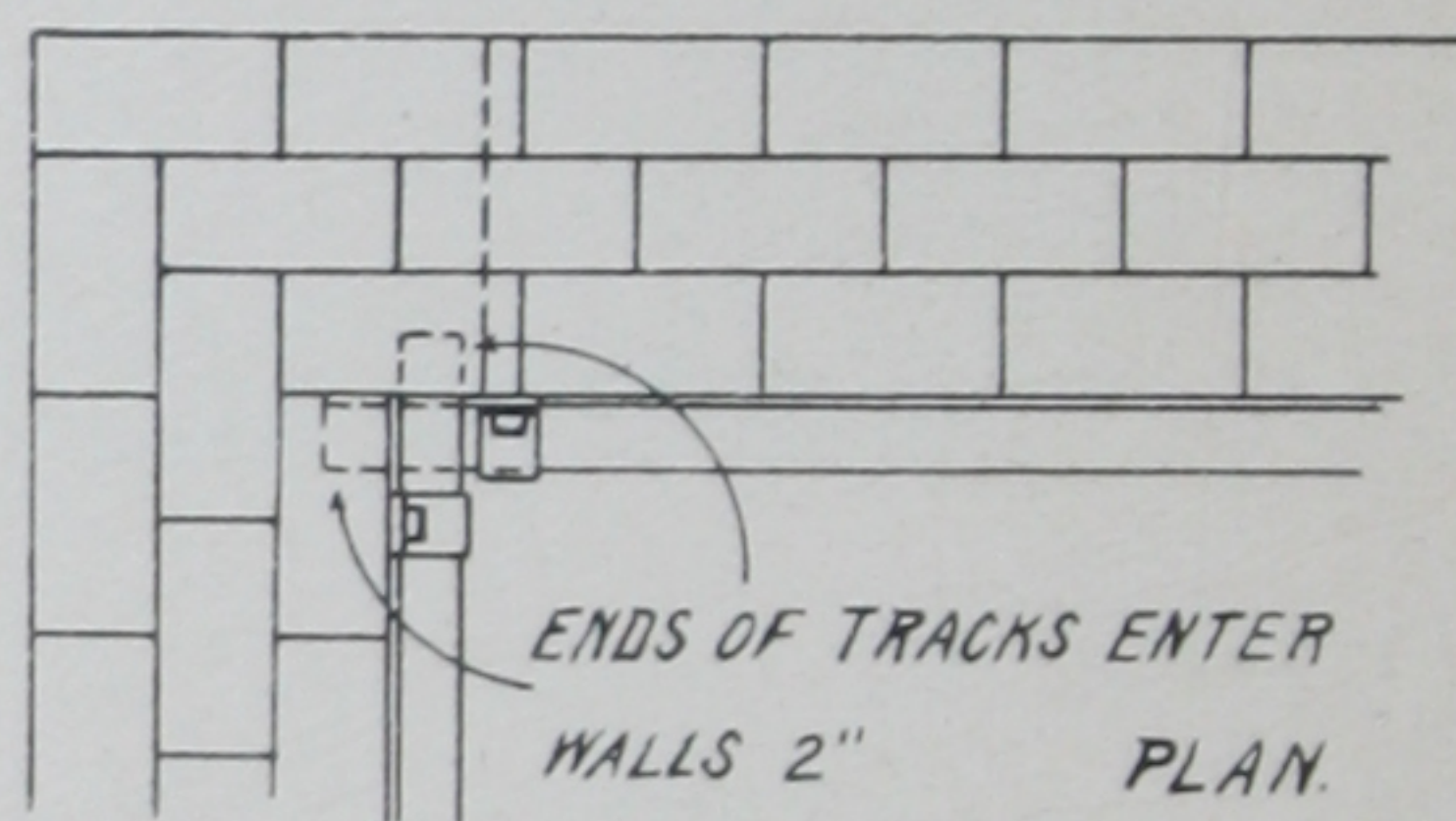


Fig. 2. Details of Track and Hangers arrangement for Right Angle Sliding Doors.

These fixtures with brackets for side wall attachment require about 8-inch headroom above the doors for doors of ordinary weight. If ceiling attachment brackets are used, the headroom can be reduced to 7 inches. For doors $2\frac{1}{4}$ inches are more in thickness and extra heavy, a larger size track should be used. This will require about $2\frac{3}{4}$ inches more headroom.

In hanging doors with any style of trolley track, the builder should be sure to use a sufficient number of brackets, spacing them 2 or 3 feet apart.

ARRANGING TRACKS WHERE DOORWAY IS NOT FULL WIDTH OF FRONT

Fig. 3 shows a condition which is more frequently met with, that is, a garage in which there is a foot or more space between the jambs and the side wall and yet not space enough

to slide the doors. In this case the doors can also be hung with the right angle door hangers already described, sliding the door overs against the side wall. A slightly different arrangement of the track is required, but if erected as described below

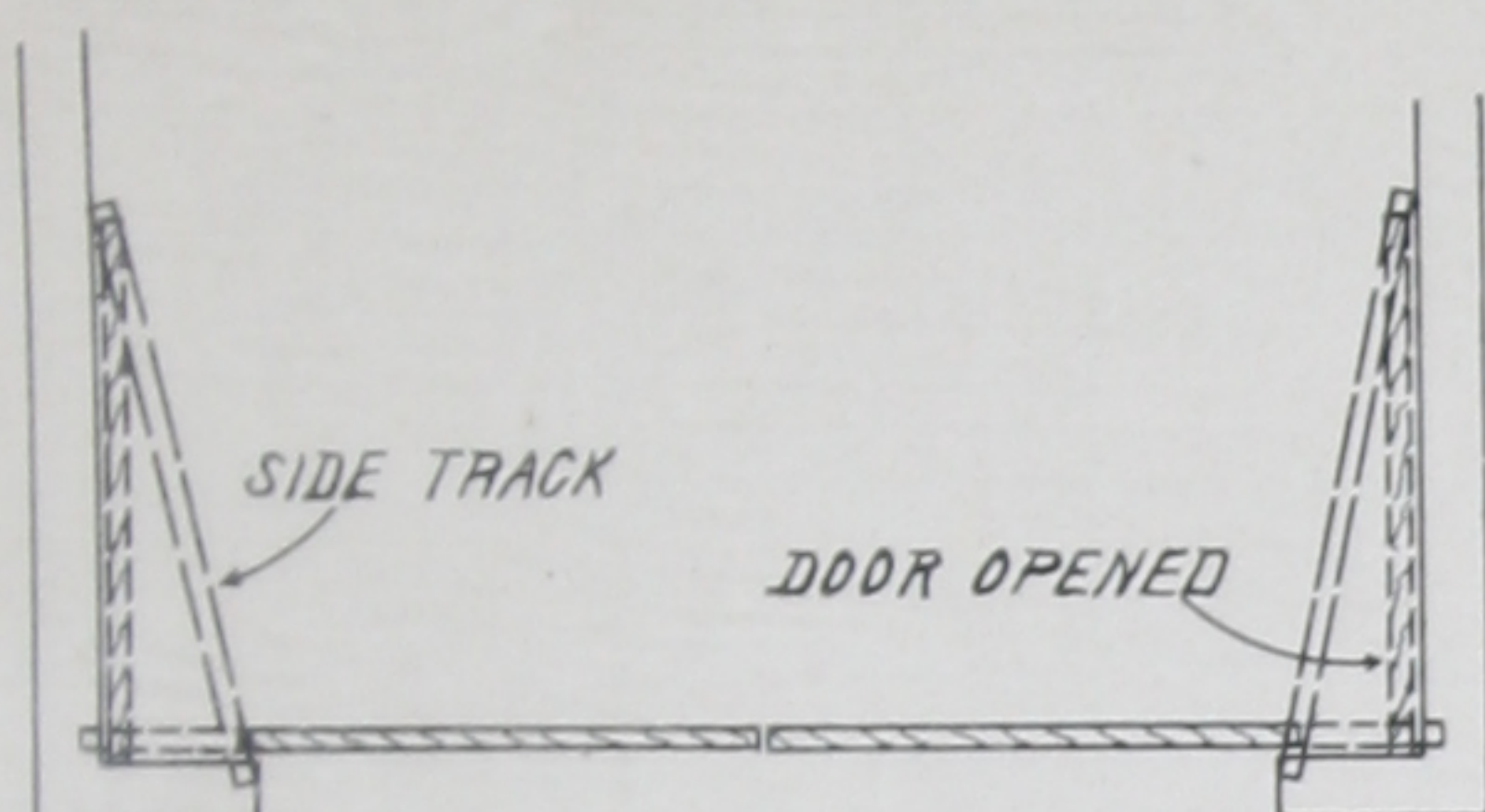


Fig. 3. Plan View of Right Angle Doors.

a satisfactory working job may be had. After the hangers have been attached to the doors, measure the distance "C" from the front edge of the door to the center of the rear hanger pendant, and lay off this dimension on the top of the front track, measuring either side of the center and draw a line,

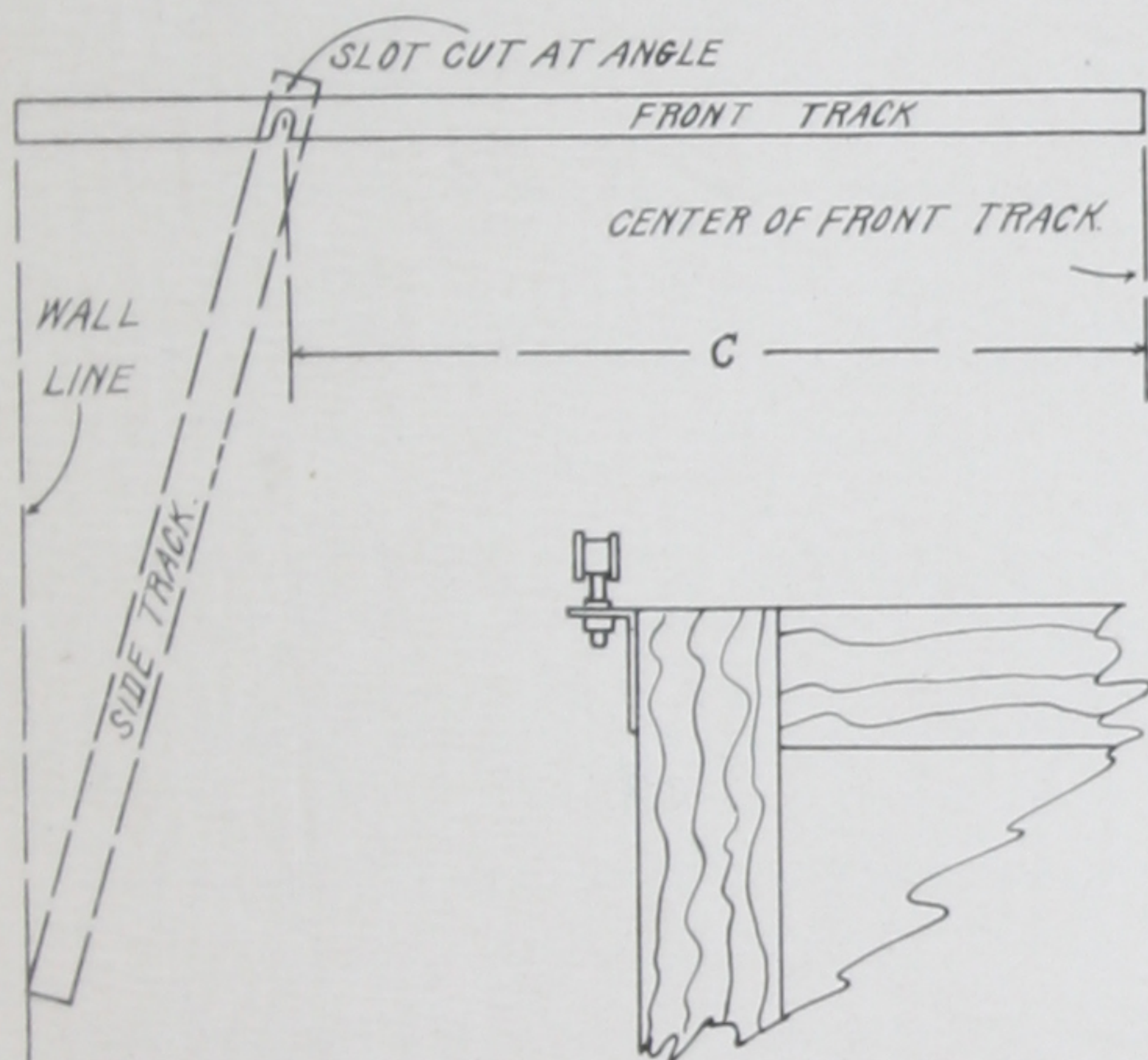


Fig. 4

Fig. 5

Fig. 4. Then with the track lying on the floor, place one end of the side track on top of the front track over the line and the other end in a line at right angles with the out end of the front track and mark the angle which side track makes with front track. The slots in front track will then be cut with hack saw and chisel to this same angle and will appear as shown in Fig. 4. The side tracks may be supported with the regular side brackets by placing a board across the corner

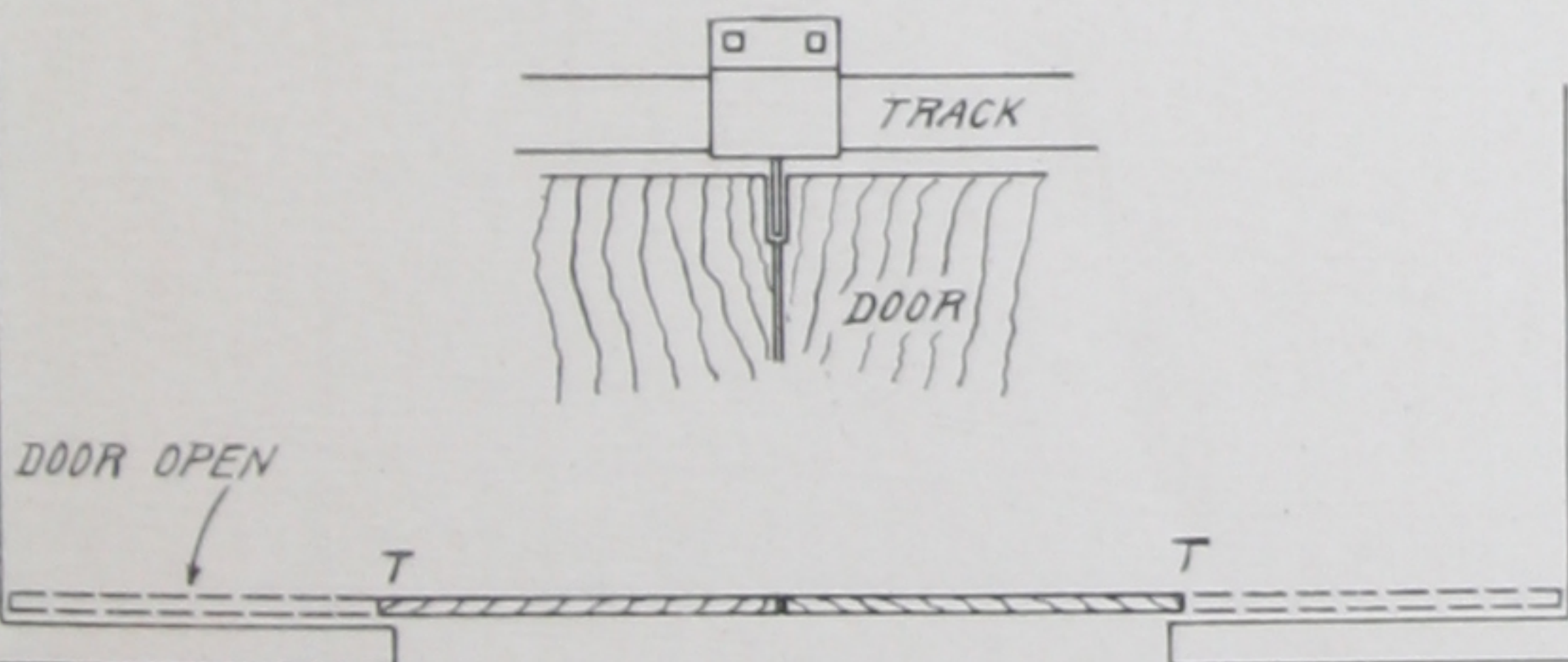


Fig. 6.

of the building to which the brackets can be attached or the track may be attached to the ceiling with suitable brackets. In this case the front end of the side tracks should extend into the wall 2 inches and if the angle of this track is great, the back ends of tracks should enter walls a short distance. The front track should extend entirely across front of building and two inches into side walls.

On rare occasions there may not be headroom enough to use one track above another and in these cases it is necessary to use a rear hanger with pendant same length as front hanger and to attach rear hanger to door with special irons as shown in Fig. 5. The front track will then be made only about 4 inches longer than width of opening and the side tracks will be placed against the ends of front track and at the same height. Special fixtures are, however, to be avoided whenever possible because of extra trouble and expense involved.

If, as shown in Fig. 6, there is sufficient wall space adjoining the opening to slide the doors straight back and yet clear, a pair of simple sliding doors may be used, preferably hung on the inside of building. These doors require no special comment as builders are quite familiar with their use, except that hangers with both vertical and lateral adjustment should be used. The lateral adjustment provides for running the doors close to the jambs, assisting in keeping out the weather, while the vertical adjustment provides for the proper clearance between the floor and the bottom of the door. Of course it is unnecessary to say that the trolley or box shaped tracks are in every way superior to the old flat rail tracks and should always be used. A center stop bracket may be used over the center of the opening to stop the doors. A small notch is cut out of each door to receive the stop, see Fig. 6.

WHERE SMALL HINGED DOOR COMPELS SLIDING ALL TO ONE SIDE

Another type of building is shown in Fig. 7, in which a small swing door is located near the large door in the front wall, prohibiting the sliding of main doors toward both sides of building. In this case a single right angle door may be used, fitted with hangers and track as described above, except that in the case of a single door two four-wheel hangers should be used, a hanger with short pendant for the front end of the door and a hanger with long pendant for the rear end of

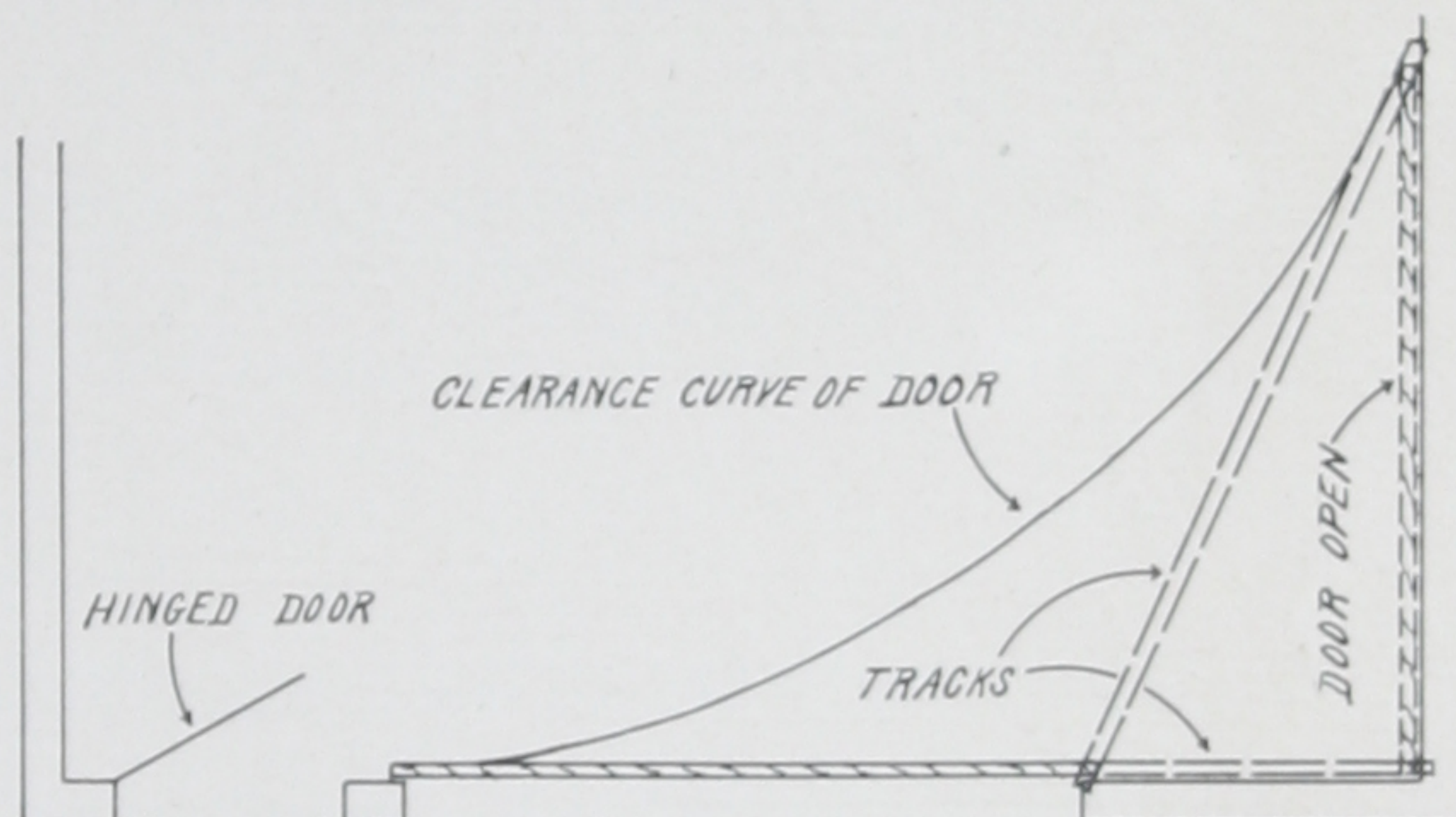


Fig. 7.

the door. If, however the car is nearly the length of the garage and too much space would be required to swing the large door around the corner (see clearance curve of door), two doors may be used, hinged together as shown in Fig. 8. As shown, a curved section of track is necessary and three hangers suitable for operating in curved track must be used.

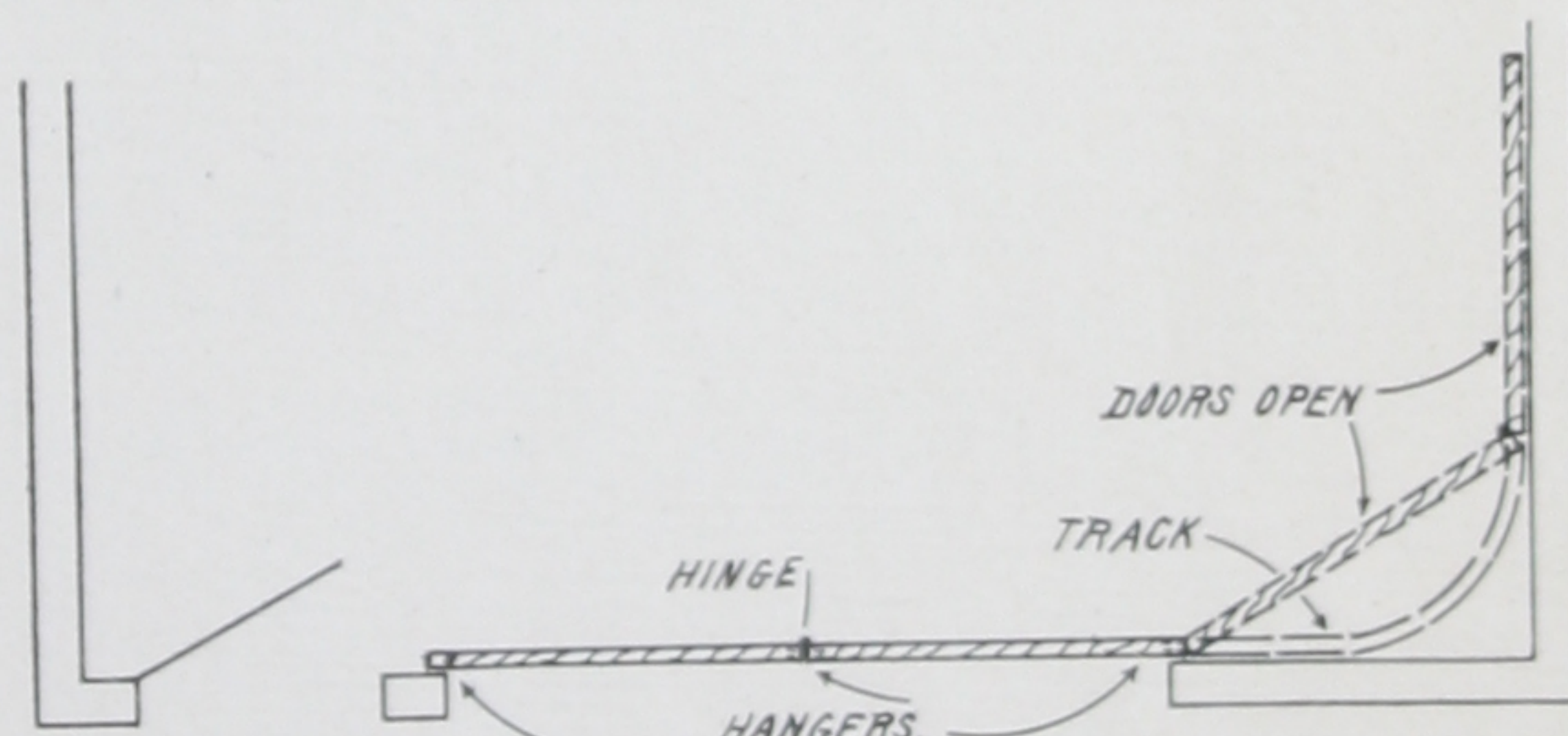


Fig. 8.

Hangers similar to the four wheel hanger for right angle doors, except that frame is knuckle jointed, are satisfactory. The center hanger must have a special plate for attaching to doors, which will bring the center of the pendant over the joint between the two doors. To make a tight job, the meeting styles of the doors should either be astragals or be rabbetted. The doors when open will stand as shown in the illustration. To use the curved track, at least two feet of space is required between the jamb and the side wall.

If there is sufficient wall space the doors for this opening may be hung as shown in Fig. 9, using one track with a compound curve. The doors will then when open stand side by side along the front wall and when closed, will hang in a continuous line across the opening. The double tracks may be attached to the head jamb with double brackets as shown in Fig. 9 at F, or separate ceiling attachment brackets may be used for each track. The hangers will have to be located somewhat farther from the edge of the door than is customary for ordinary sliding doors; and hangers with knuckle jointed frames are necessary for the door which operates in the curved track. Much time and worry can be saved if the builder will be careful to locate the track and hangers exactly according to the specifications or sketch which we are willing to furnish. Make the meeting styles of the doors astragals. This outfit operates very satisfactorily and is well liked because both doors can be hung

close to the jamb at top and at both sides, but if it is desirable to use weather strips at the bottom, the doors should be hung with parallel tracks as shown in Fig. 10. In this case, the jamb G should be furred out to meet the door and the head jamb at H should also be extended out to meet door. If the hanger

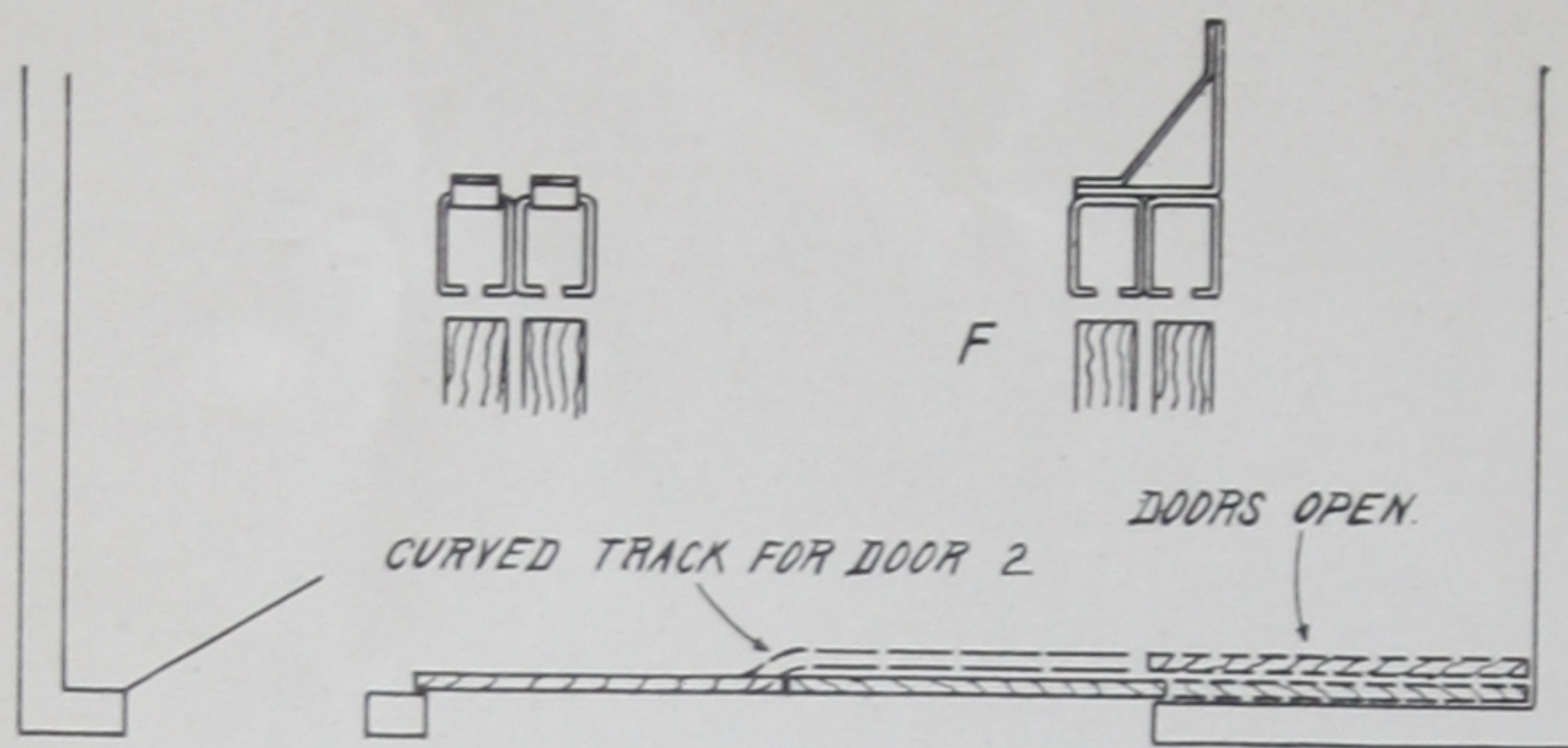


Fig. 9.

aprons are set into the doors flush, less space is required between the doors for clearance in operating, but a better and cheaper method of closing the joint between the doors is shown in the sketch where I-I are strips $\frac{1}{2}$ inch thick and

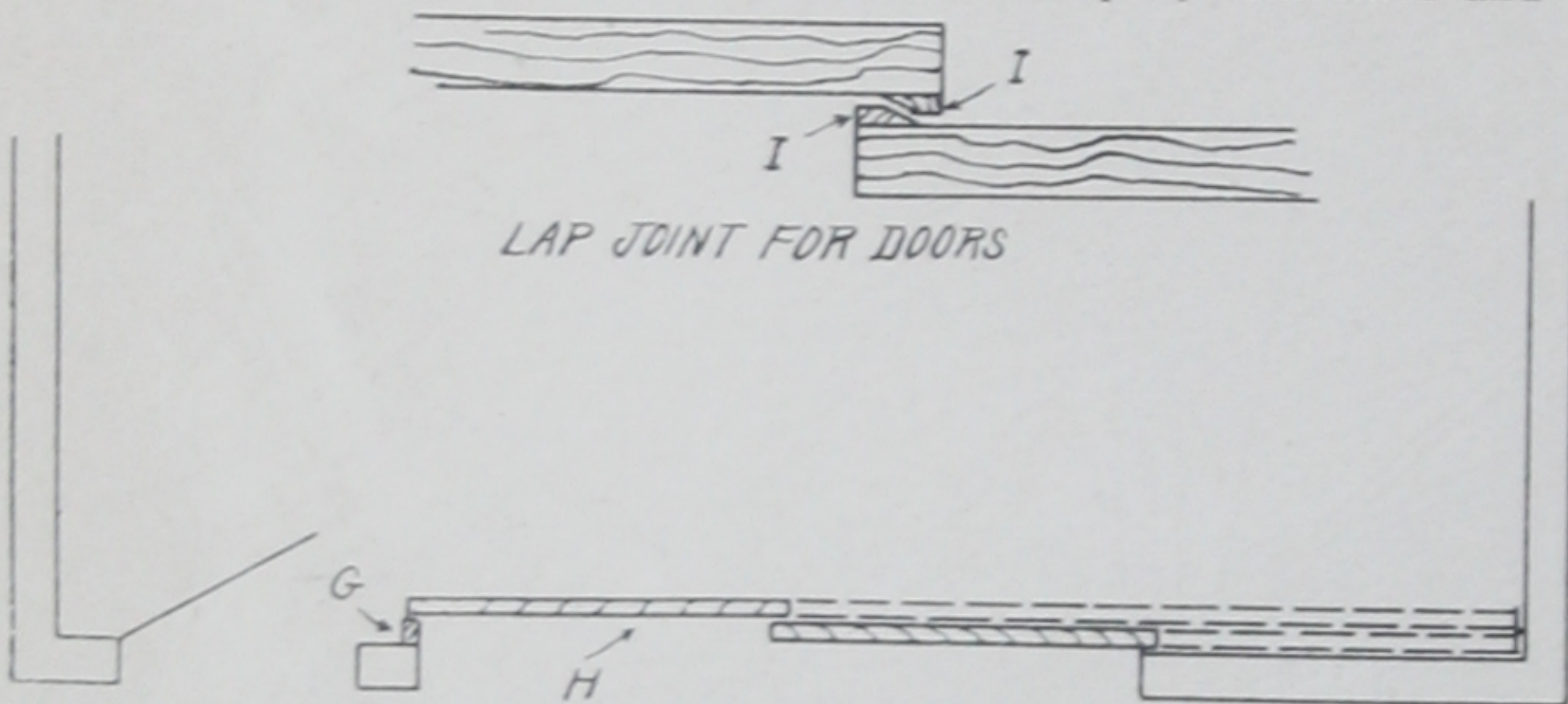


Fig. 10.

1 inch wide nailed to the doors. The doors can then have from $\frac{1}{4}$ to $\frac{3}{4}$ inches space between them, allowing sufficient clearance for hanger aprons and nuts and yet when closed the two strips lap from $\frac{1}{4}$ to $\frac{3}{4}$ inches, making a tight joint.

The sliding folding door shown in Fig. 10A can sometimes be used to good advantage. Four doors hinged together in pairs, are required for each opening, one pair folding to the right and the other to the left side. The overall width of all the doors should be the same. The meeting stiles of the doors should be rabbetted to make weathertight joints, but it is essential to cut the rabbets and apply the butts exactly as shown in the illustration to prevent trimming an excessive amount from the upper corners of the center doors where they interfere with the stop over the center of the doorway.

A swivel hanger is attached near the edge of the doors which meet at the center of the opening. These hangers operate in tracks which are set at an angle with the front wall, the outside end being the farthest from the wall. Doors may be hung to stand at any angle with the front wall to suit the width of wall space adjoining the opening. The distance the hanger is set from the edge of the door determines the angle at which the doors will stand when open. When wall space will permit the doors to be swung around to a position parallel with the wall, the hanger should be set at the minimum distance, 2 $\frac{1}{2}$ inches. For other angles the distance will be greater and must be found experimentally by swinging doors to open position, placing hanger in track and marking the position of the bolt holes.

The bottom of the doors are held in place at the center by a guide which is set into the floor. Steel shoes are attached to the lower corner of the door to prevent injury by the guide.

Two top and bottom bolts joined to center operating handles by connecting rods, are required for each set of doors. These are attached to the stiles of the center doors which are hinged to outside doors and are operated from the inside of the building.

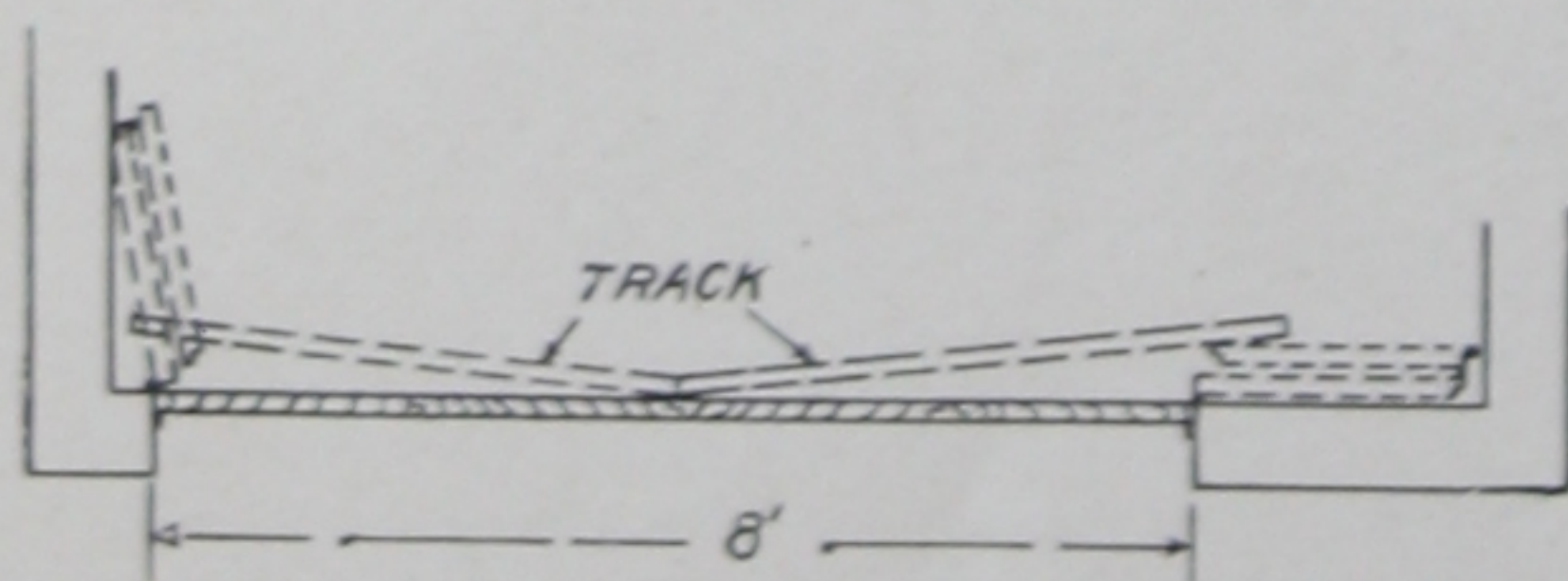


Fig. 10 A.

ARRANGING TRACKS FOR LARGER GARAGES

Next consider private garages for one car with the main opening close to one side of the front of building as shown in Fig. 11. This type of building allows plenty of room inside for workbench, tools, etc., used in making repairs. Here there is sufficient wall space to slide a single door parallel with front wall and needs no special comment. This is the simplest form of hanging doors with trolley track and if the

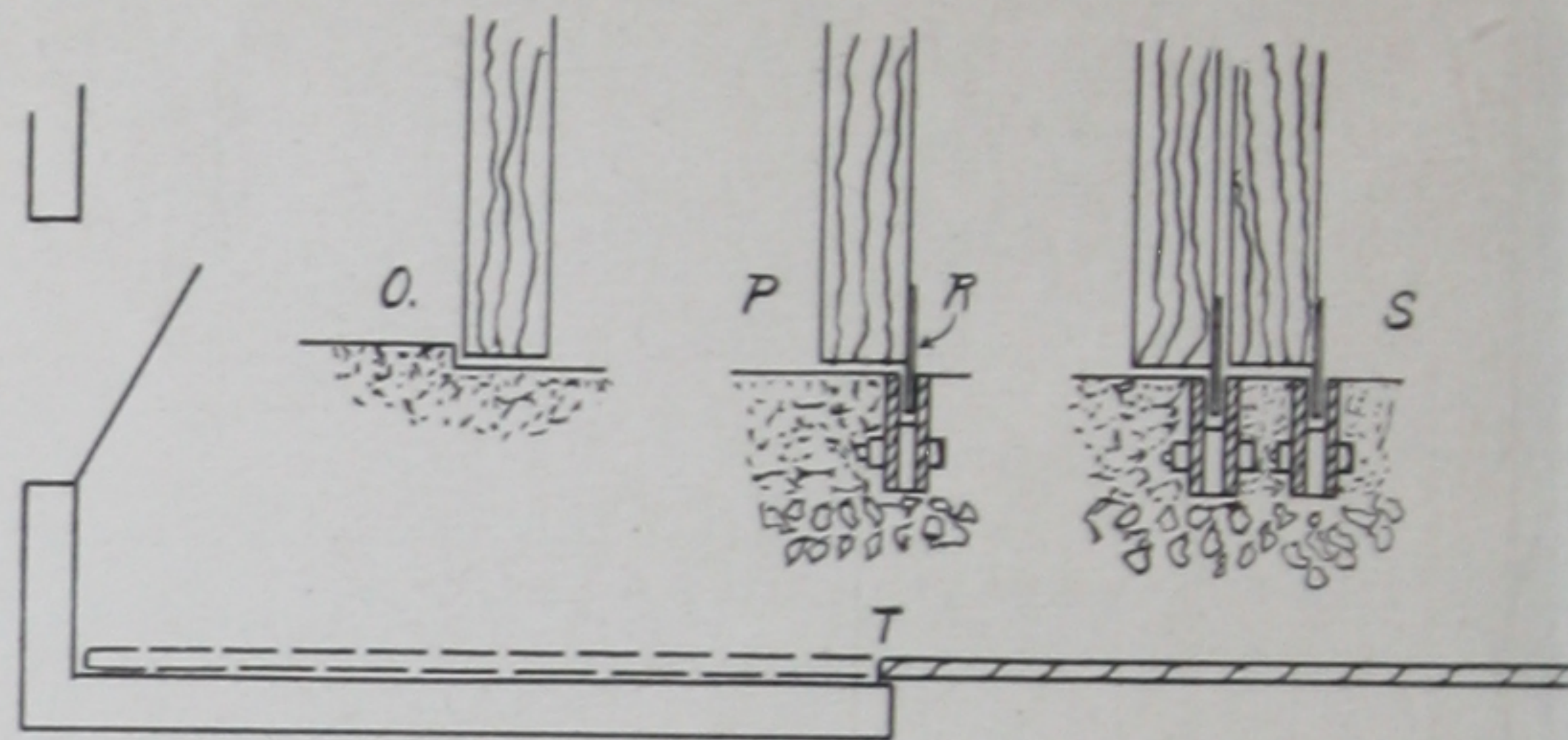


Fig. 11 Details of Storm Tight Sills.

door laps the opening from 2 inches to 4 inches we have a reasonably weatherproof job.

WIDE SLIDING DOORS ARRANGED IN SEVERAL SMALL UNITS

If, however, the small swing door is located in the front wall or if the wall space is too narrow to slide a single door, several other methods can be used as shown in Figs. 12-9-

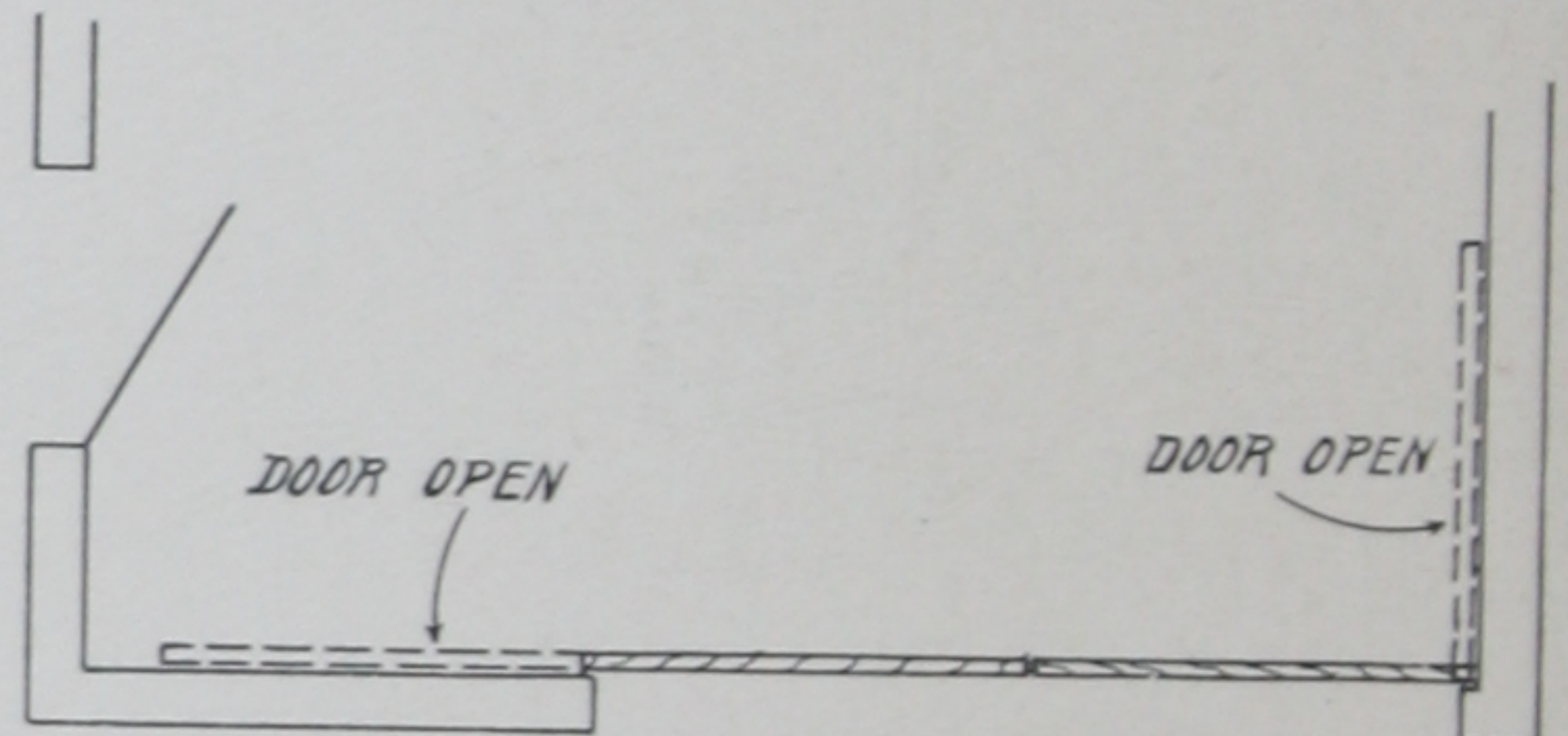


Fig. 12. Wide Door in Two Panels.

10-13. Fig. 12 shows one regular sliding door and one right angle door; Fig. 9 shows two doors, one of which slides in a track using a compound curve, while Fig. 10 shows two doors sliding on parallel tracks. These methods have been fully described.

A single right angle door might be used but if there is not space enough between the car and the door to allow the large door to make the turn, the tracks can be arranged as shown in Fig. 13. A plot of clearance curves for right angle doors of various widths is given in Fig. 14. Referring again

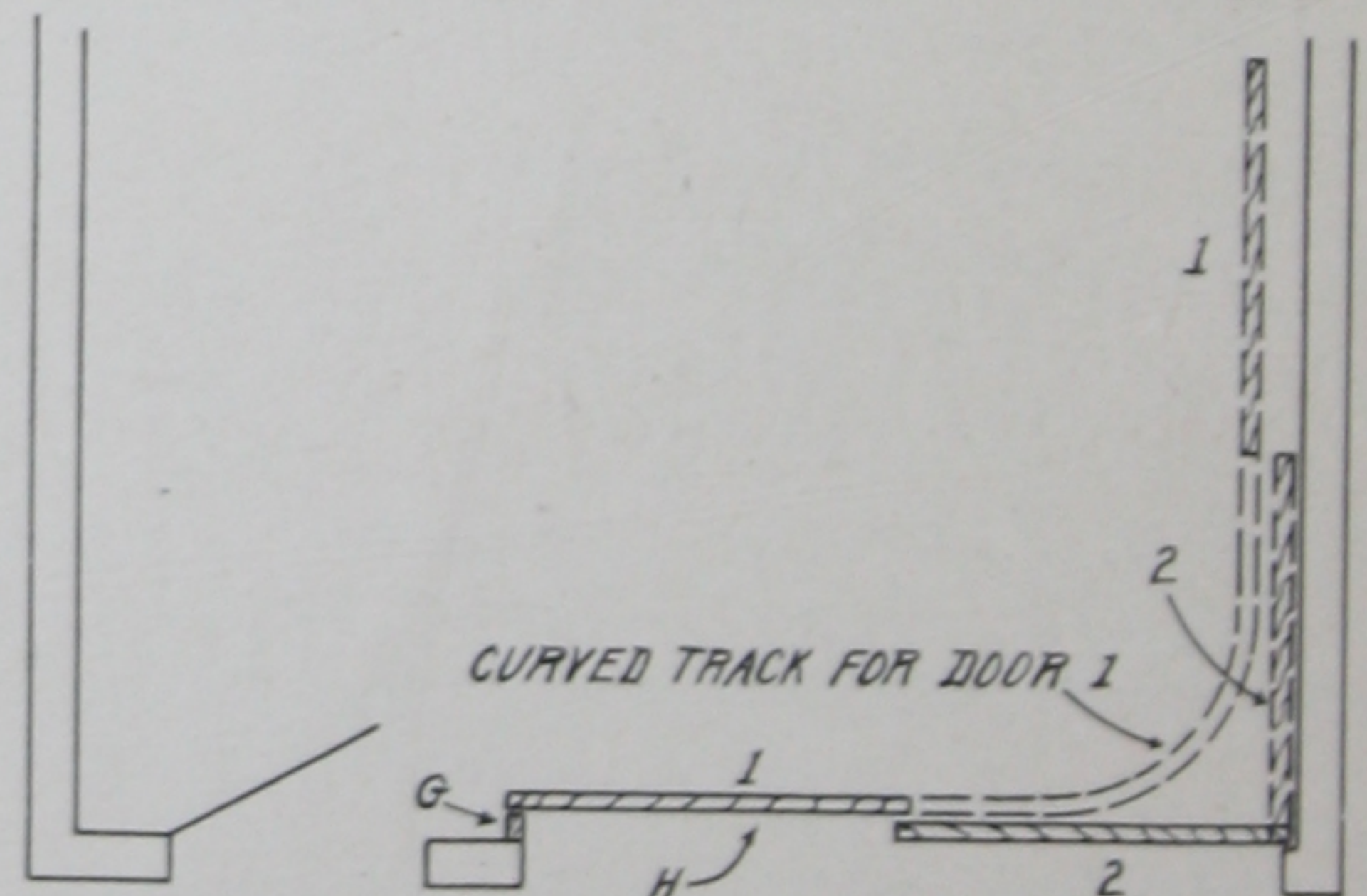


Fig. 13. Right Angle Doors Requiring Minimum Space for Turn.

to Fig. 13, "2" is a regular right angle door and "1" runs in a curved track. Door No. 1 is opened first and moved down the sidewall and No. 2 is opened afterwards. The jamb "G" and the head jamb "H" in this case must also be furred out to meet the doors. The front track for door No. 2 and the entire track for door No. 1 are on the same level, while side track for door No. 2 is set above the front track as previously described for corner doors.

SLIDING DOORS FOR TWO CAR-GARAGES

A few of the larger garages designed for two or more cars will now be considered.

A garage in which the opening occupies the entire front is shown in Figs. 15 and 16. This opening may be closed in several ways; first if it is necessary to have the entire front open at the same time, the doors may be arranged similar to those shown in Fig. 3 except, of course, that the doors

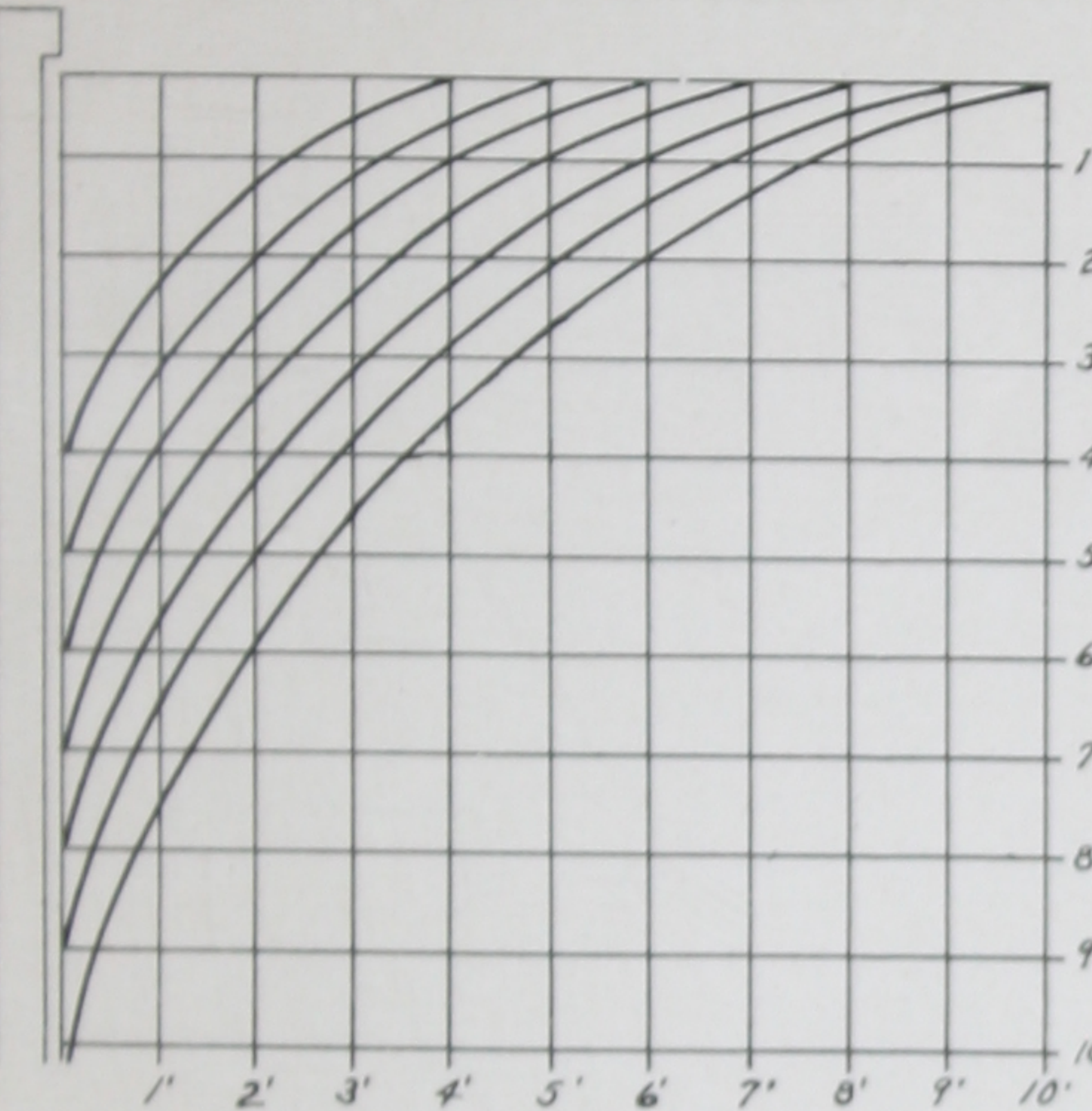


Fig. 14 Clearance Curves for Right Angle Doors of Various Widths

will be larger. It, however, is seldom necessary to have the entire front clear at the same time and the arrangements shown in Figs. 15 and 16 permit the use of half the opening and are preferable because of their simplicity. Fig. 15 shows a column in the center of the opening and one door hung inside the building, one door outside. Both tracks, of course, extend entirely across the front and the doors can be moved to either side. When closed the doors lap the jambs and the column and a good tight job is secured. If there is no column in the center, the doors may be hung on parallel tracks on

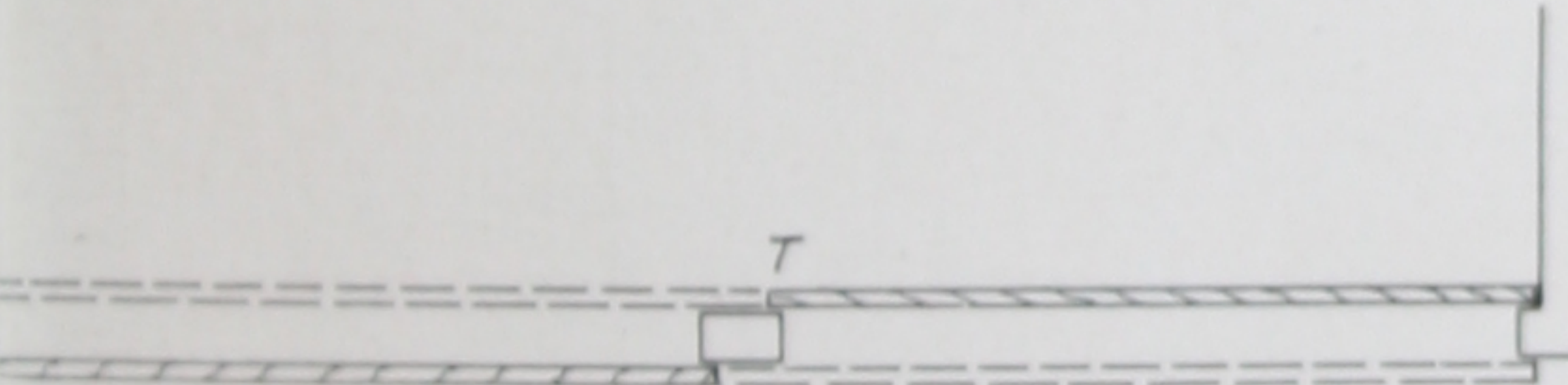


Fig. 15. Both Doors can not be Open at the Same Time.

the inside of building, using double brackets attached to side of header to support the tracks and the same result is accomplished see Fig. 16. On rare occasions there may not be headroom enough for the double side wall brackets and in such cases ceiling brackets may be used, attaching either to the ceiling or to the bottom of the head jamb as conditions may require. When using parallel tracks a metal weather-strip should be used between the tracks and extending down between the doors, to keep out the weather. This will be taken up in detail later.

In Fig. 17 is shown an opening closed by two doors on parallel tracks, which extend back along the inside wall a sufficient distance to let both doors slide back to clear the opening. In this case the track for door No. 1 nearest the wall, need only extend as far as the center of the opening, but the other track should extend entirely across the opening. The jamb at "G" is furred out to meet door No. 2 to make a tight job. In this case a wicket door is shown in door No. 2.

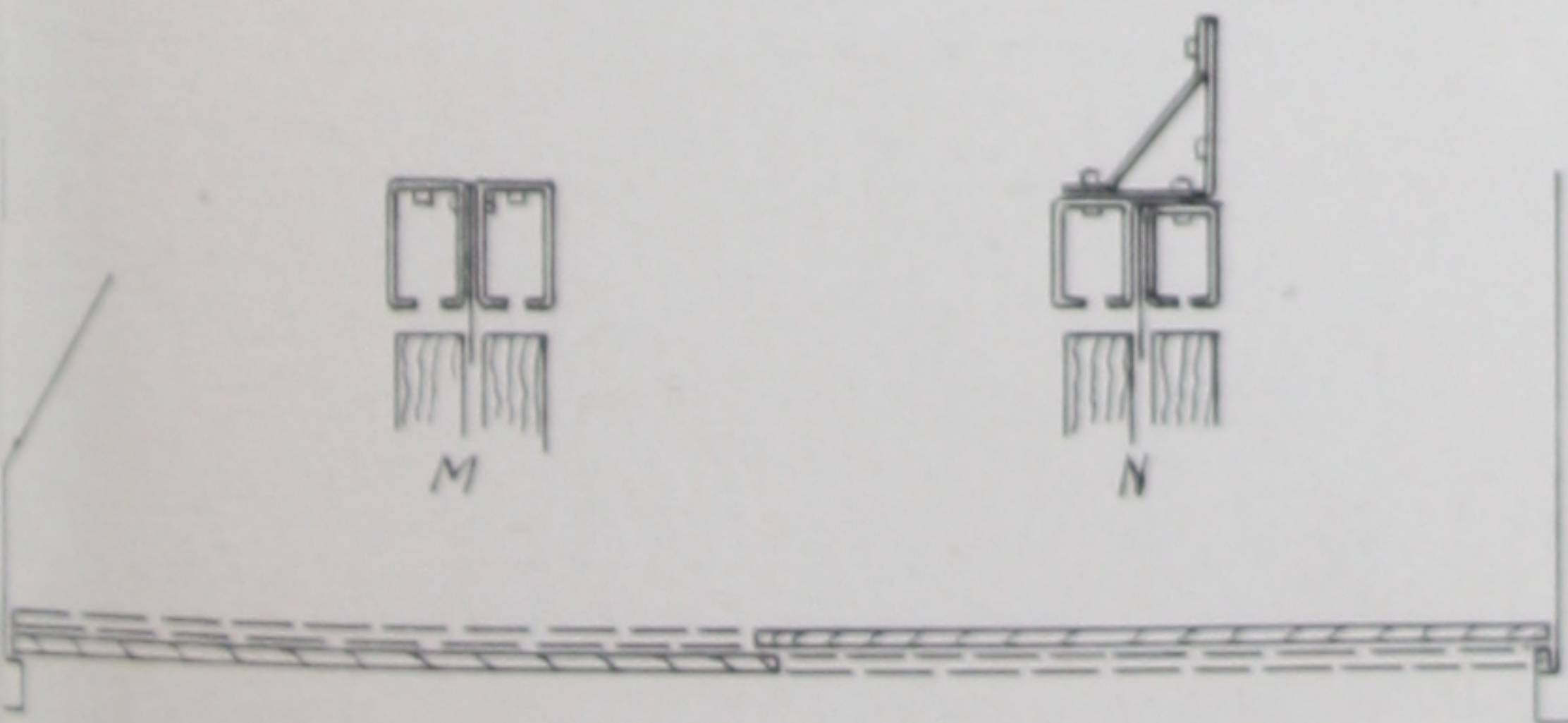


Fig. 16. No Center Column Present.

Fig. 18 is another example of parallel doors in which four doors are required. doors No. 1 and No. 3 running on one track and doors No. 2 and No. 4 running in the other tracks. In this case the wall space was not wide enough to use the method shown in the previous figure. The center column should be furred out to meet doors No. 1 and No. 3, but if there should be no column, the same arrangement may yet be used, doors No. 1 and No. 3 butting together. A special locking arrangement is then required.

Fig. 19 is a modification of Fig. 9.



Fig. 17. Two Doors to Slide Back of Side Space.

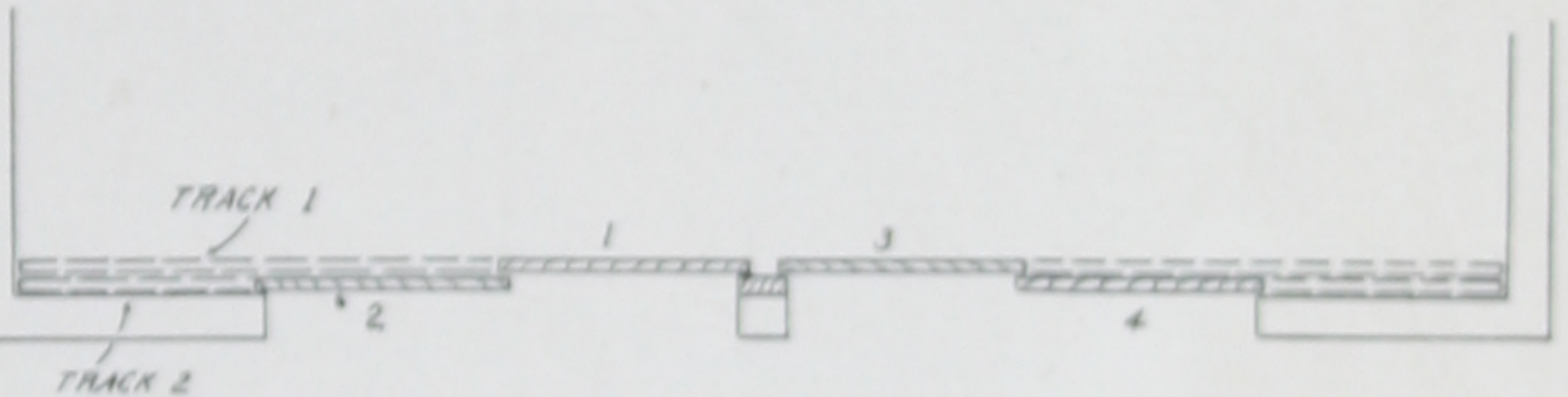


Fig. 18. Both Doors Arranged in two Panels to Slide Back of Narrow Side Space



Fig. 19. Doors Slide on Parallel Tracks, but when Open, Close Small Door.

DOOR SCHEMES FOR THREE-CAR GARAGES

Garages for three cars are shown in Figs 20 to 23 and the methods to be used when necessary to have either one, two or three sections of doors open at the same time. Fig. 20 requires two lines of parallel tracks and three doors, the center one being hung on the track farthest from the wall. It is then unnecessary to fur out either jamb column. With this arrangement, of course, only one section of opening is clear at a time.

The next arrangement Fig. 21, permits two sections of the opening to be clear at the same time and requires three lines of parallel tracks, one door running in each track. The jamb "G" should be furred out to meet door No. 3; two weatherstrips should be used at the top to keep out the



Fig. 20. Three Doors or Two Parallel Tracks.

weather; and guides for the bottom of each door should be provided. Another method of clearing two sections of the opening at the same time is shown in Fig. 22 where doors No. 1 and No. 3 are right angle doors and No. 2 slides on a track across the entire front of building. This method requires a little more space between the car and the doors.

In rare cases it might be desirable to have the entire front clear and this may be accomplished as shown in Fig. 23 which is a combination of right angle doors and a third door running on a curved track. Door No. 2 on the curved track is preferably made in two sections hinged together and hung with hangers as described in Fig. 8. To clear the open

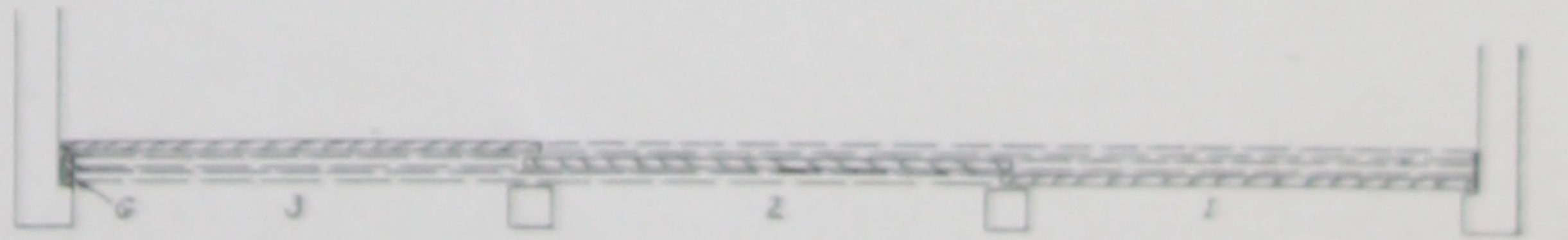


Fig. 21. Three Doors on Three Parallel Tracks.

ing, door No. 3 is first moved back along the side wall as indicated and the way is then clear for the operation of the right angle door No. 1 and door No. 2. In hanging door No. 2 the track beginning at point "L" should gradually angle away from the track for door No. 3, this will insure plenty of clearance between No. 2 and No. 3 while making the curve.

The next plan, Fig. 24, illustrates three doors on parallel tracks all the doors sliding back toward one side when open, leaving the entire opening clear. This method may be used when the wall space is not less than the width of one door. It is not necessary to have the three tracks extend entirely across the opening, the first track need only extend across one-third the opening and the second track across two-thirds the opening.

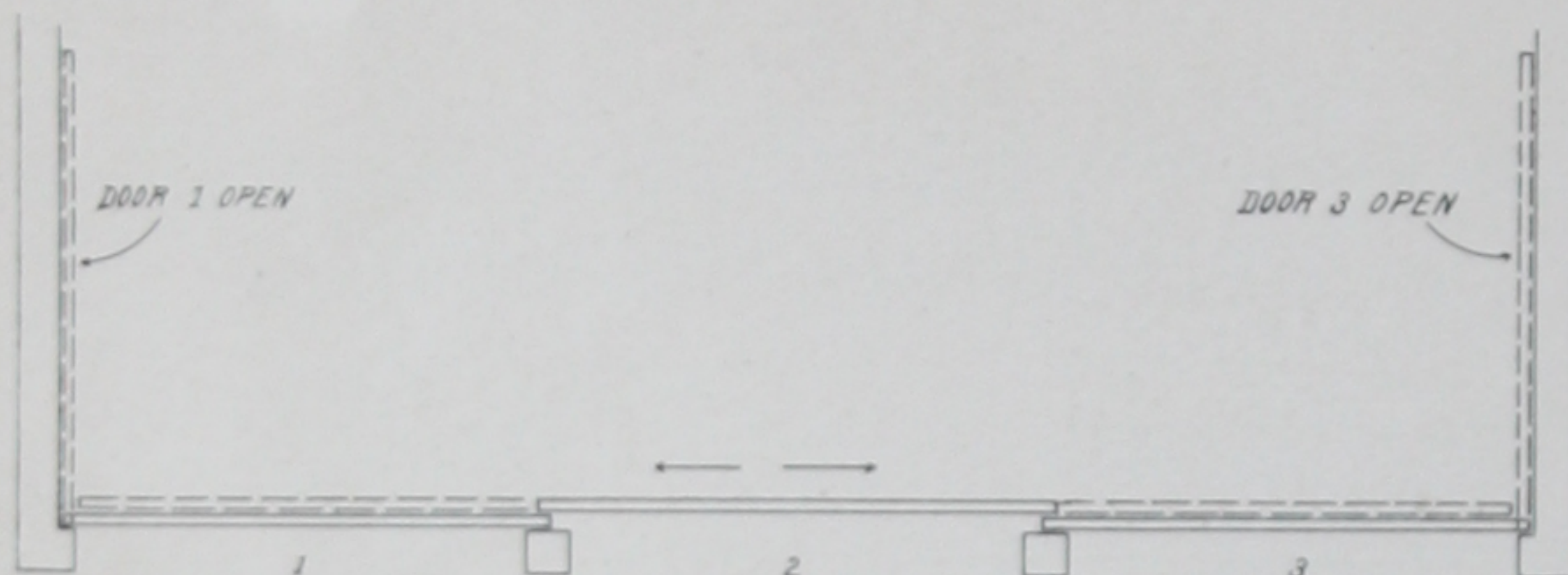


Fig. 22. Two Right Angle Doors and One Straight Slider.

From the installations just described and the accompanying illustrations the doors of almost any form of garage opening can be provided for. Of course, different combinations of the above methods will suggest themselves to one who has special conditions to meet.

MAKING SLIDING DOORS STORM TIGHT

The next thing to consider is the means for keeping out the weather and this can be accomplished with a reasonable degree of satisfaction.

The doors illustrated in Figs. 1-3-6-7-8-9-11-12-15-19 require no special treatment in this respect for the doors will be reasonably weatherproof if they are made to lap the side and head jambs from 2 inches to 4 inches. In such of the above doors where two doors are required butting against each other, a material difference will be noted if the meeting stiles are rabbetted or if preferable they may be made in the form of astragals. The doors should be adjusted to run as close to the jambs as practical without chafing. Doors in Figs. 10-13-17-18 can be finished in the same way if one side jamb and a part of the head jamb are furred out as noted above.

Figs. 16-20-21-24 present a different problem in that it is impossible to fur out the head jamb at any point; it being necessary for all the doors to slide across the entire opening and anything added to the head jamb would interfere with this. It is, of course, obvious that there will be quite an opening between the top of the door which runs on the inside track, and the jamb and this will permit considerable wind



Fig. 23. Arrangement to Clear All Three Doors.

and cold to enter. A satisfactory solution of this problem is found in the steel weatherstrips which may be procured as a part of the door hanger equipment. These weatherstrips are steel plates which extend entirely across the opening and are attached to the tracks. The lower edge extends down between the doors and laps the top of the doors a sufficient distance to prevent wind, rain or snow from getting into the building. The upper edge either extends to the ceiling or heading timber or is bent over above the track to meet the

head jamb thus making a tight job. Illustrations of several of these upper weatherstrips are given in cross section in Fig. 16. "M" is made for ceiling attachment and "N" is adapted for side wall attachment.

In some cases it may be desirable to provide some means for closing the space between the bottom of the door and the floor. At "O" in Fig. 11 a method is shown which is sometimes resorted to when single doors or two doors running

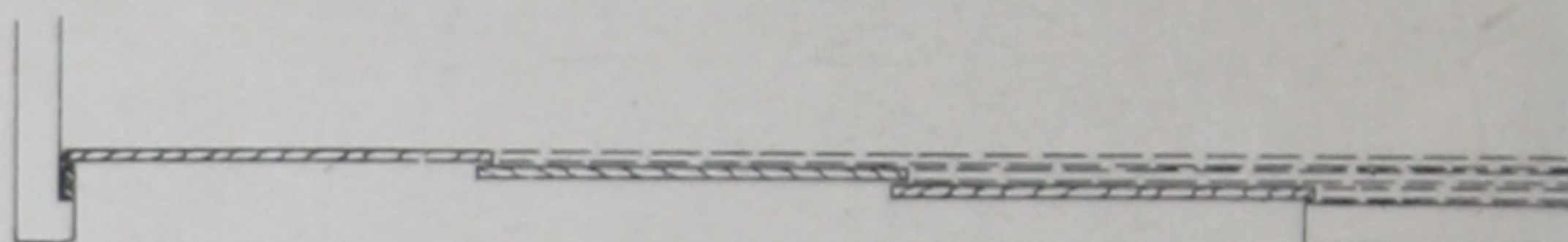


Fig. 24. Wide Opening with Three Doors on Parallel Tracks.

in the same track are used. This is done by simply building the floor of the inside of the building about $\frac{1}{4}$ inch higher than the doorway and the space where the doors slide. This method is simple and may be effective but its application is very limited. At "P" is shown an article which serves as a weatherstrip for the bottom of the doors and also acts as a guide and is suitable for any door or any number of doors sliding in straight lines. The floor strips are built into the floor and finished flush so there is no obstruction whatever. In setting these strips a good depth, of course cinders should be provided beneath as shown to provide for drainage, unless some other means is more suitable to meet the case in hand. Some means of drainage should always be provided for. The two pieces which form the floor strip are held the proper distance apart by small separators, the space between these separators being left open to the bottom so that any water may easily find its way to the drainage facilities. "R" is a steel strip attached to the door which slides in the opening between the floor strips thus making a tight job. At "S" the application of these strips to doors operating in two parallel lines of track is shown, both floor strips of course should be the entire length which the doors slide.

No satisfactory bottom strip for right angle doors or doors operating in curved track has been devised and by many this is considered unnecessary if the doors are adjusted reasonably close to the floor.

When weatherstrip guides are not used at the bottom of the doors, some other form of guide shoe or roller should be used to keep the bottom of the doors in place. For simple sliding doors Figs. 6-11-15 a roller of substantial design should

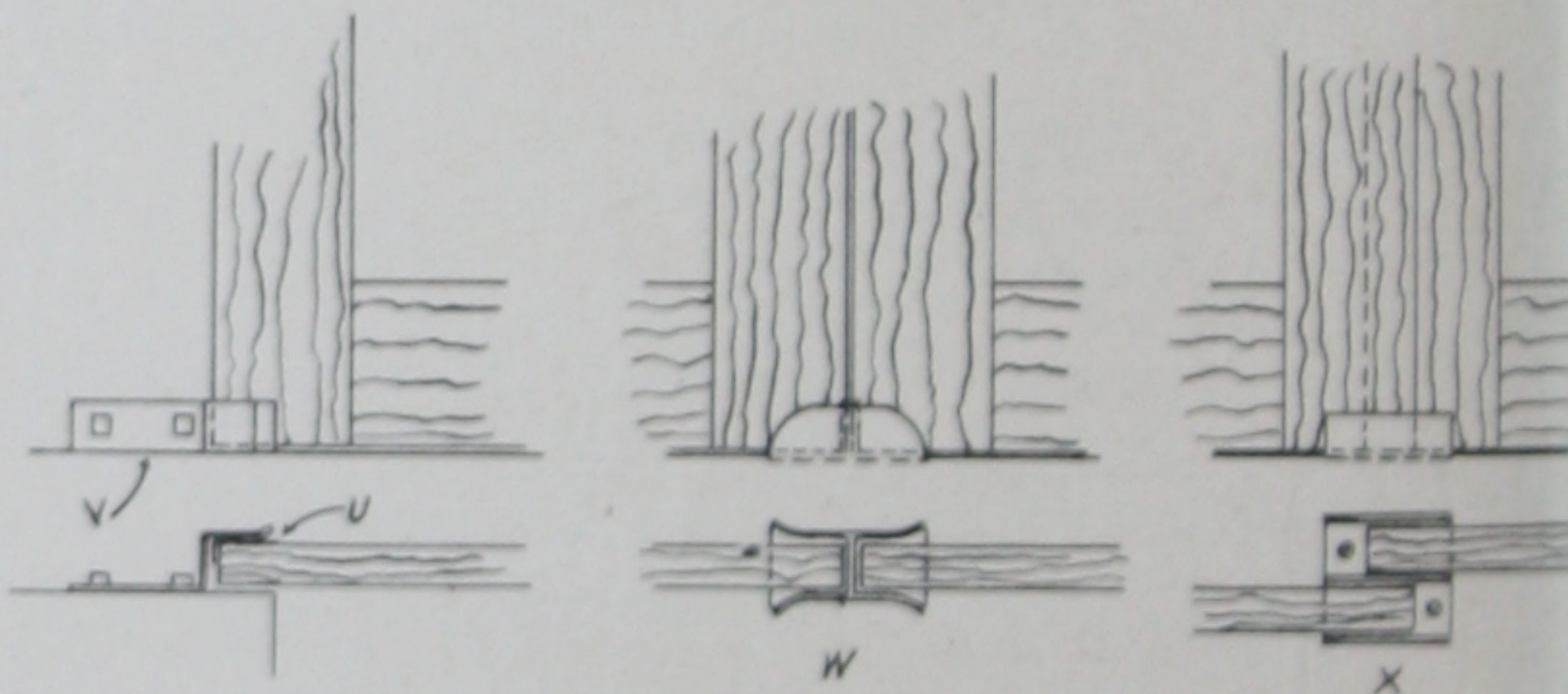


Fig. 25. Details of Sliding Door Stops.

be used at points "T" and it is sometimes desirable to place a guide roller on the side of the opening toward which the door closes but this is better accomplished by means of a binder as shown in Fig. 25-"V". This Binder, which may be placed next to the floor where it will be out of the way, also assists in guiding the door to meet the lock or latch properly. If a shoe is attached to the corner of the door as shown at "U" the binder will not damage the door at all.

In the center of the opening Figs. 1-3-6-12 a center stop and binder, Fig 25-"W", should be set in the floor to receive the doors. A double guide about 6 inches in length, Fig. 25-"X", is useful in the center of the opening when two doors on parallel tracks are used as in Fig. 16.

The foregoing covers pretty generally the best practice for hanging garage doors and the methods illustrated will meet nearly all requirements, though occasionally some condition may arise which will demand special consideration. It is best in such cases to consult manufacturers who make a specialty of this class of hardware and some suitable scheme can usually be suggested.

Reproduced from a Series of Articles Copyrighted 1913-14 by American Carpenter & Builder, Chicago.

R-W Ball-Bearing Trolley Garage Door Hangers

Are the highest type of hanger construction. The yoke is made of steel, the cones machined and all case hardened. The high duty steel balls are perfectly true, insuring an easy smooth operation of these hangers under loads (see detail below). Adjustable vertically, it compensates for any settling owing to shrinkage of timber. The lateral adjustment prevents the chafing of door. This will appeal to Architects who are striving for fitness, not cheapness of things. These Ball-Bearing Hangers are inexpensive.

WHAT TO SPECIFY

No. 27 $\frac{1}{2}$ B-1 Hanger for doors 1 $\frac{3}{4}$ to 2 in. thick, weighing up to 400 pounds. (For No. 31 track.)

No. 27 $\frac{1}{2}$ B-2 Hangers for doors 2 $\frac{1}{4}$ to 2 $\frac{3}{4}$ in. thick, weighing up to 400 pounds. (For No. 31 track.)

No. 28 $\frac{1}{2}$ B-1 Hangers for doors 1 $\frac{3}{4}$ to 2 in. thick, weighing up to 500 pounds. (For No. 32 track.)

No. 28 $\frac{1}{2}$ B-2 Hangers for doors 2 $\frac{1}{4}$ to 2 $\frac{3}{4}$ in. thick, weighing up to 500 pounds. (For No. 32 track.)

No. 29 $\frac{1}{2}$ B-1 Hangers for door 1 $\frac{3}{4}$ to 2 in. thick, weighing up to 600 pounds. (For No. 232 track.)

No. 29 $\frac{1}{2}$ B-2 Hangers for doors 2 $\frac{1}{4}$ to 3 in. thick, weighing up to 600 pounds. (For No. 232 track.)

No. 123 $\frac{1}{2}$ B-1 Hangers for doors 1 $\frac{3}{4}$ to 2 in. thick, weighing up to 700 pounds. (For No. 33 track.)

No. 123 $\frac{1}{2}$ B-2 Hangers for doors 2 $\frac{1}{4}$ to 3 in. thick, weighing up to 700 pounds. (For No. 33 track.)

For Completely Equipped Single or Double Sliding Doors:

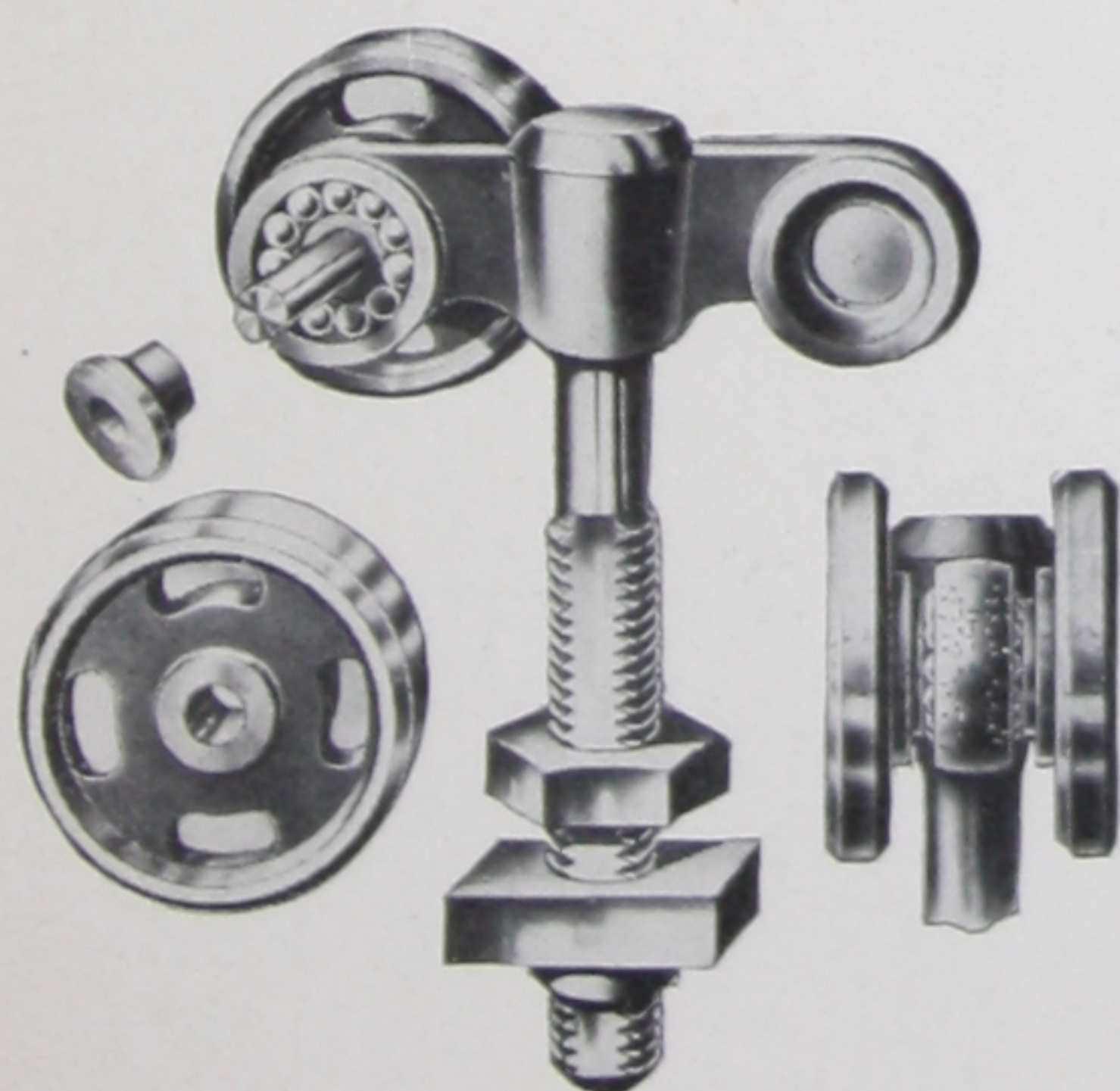
Hangers, track and brackets required.

No. 525 or No. 510 Locks.

No. 54 Guide Rollers.

No. 171 or 271 Floor center door stop or guide for double doors.

No. 272 Floor End Door stop for single doors.

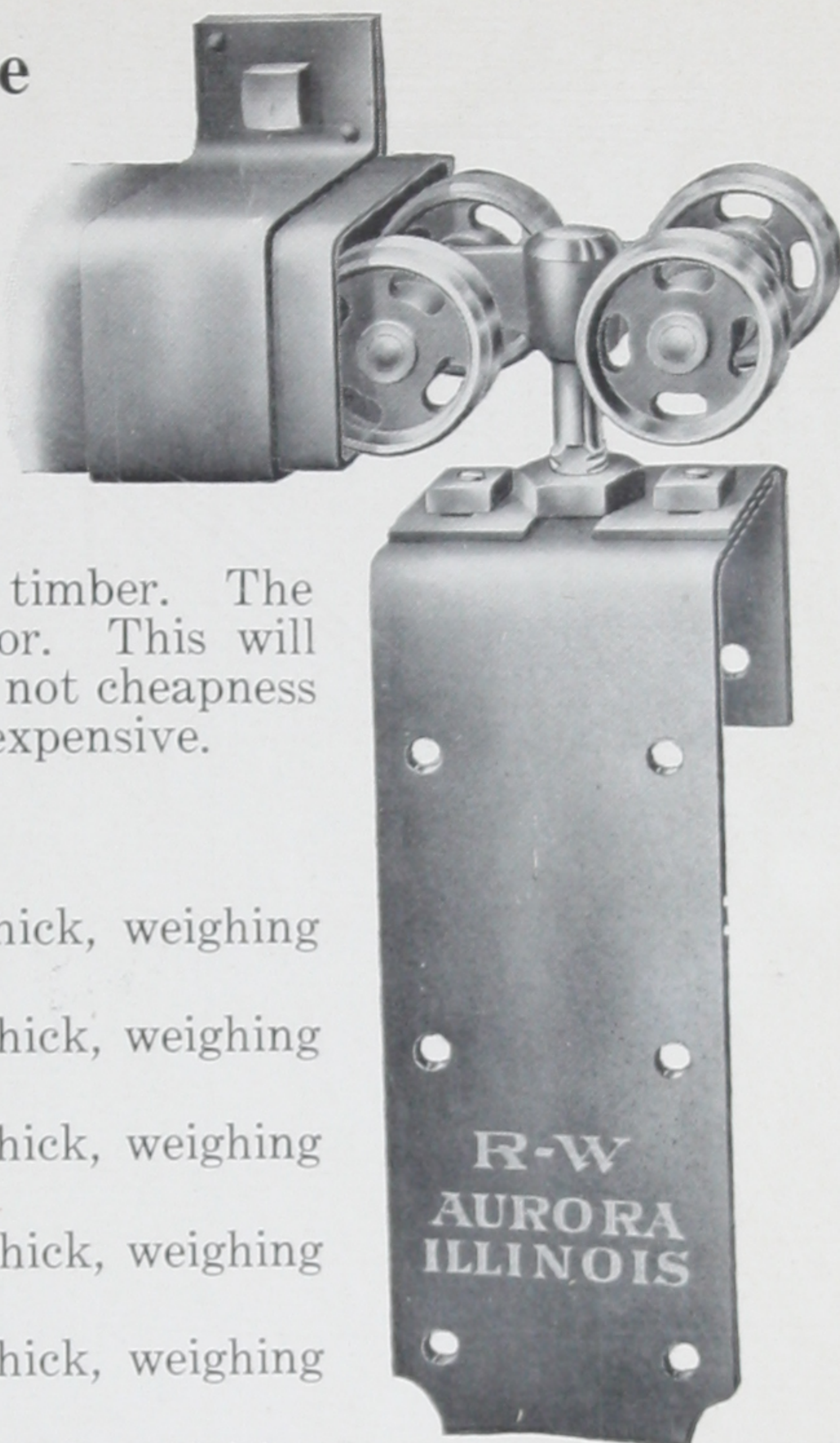


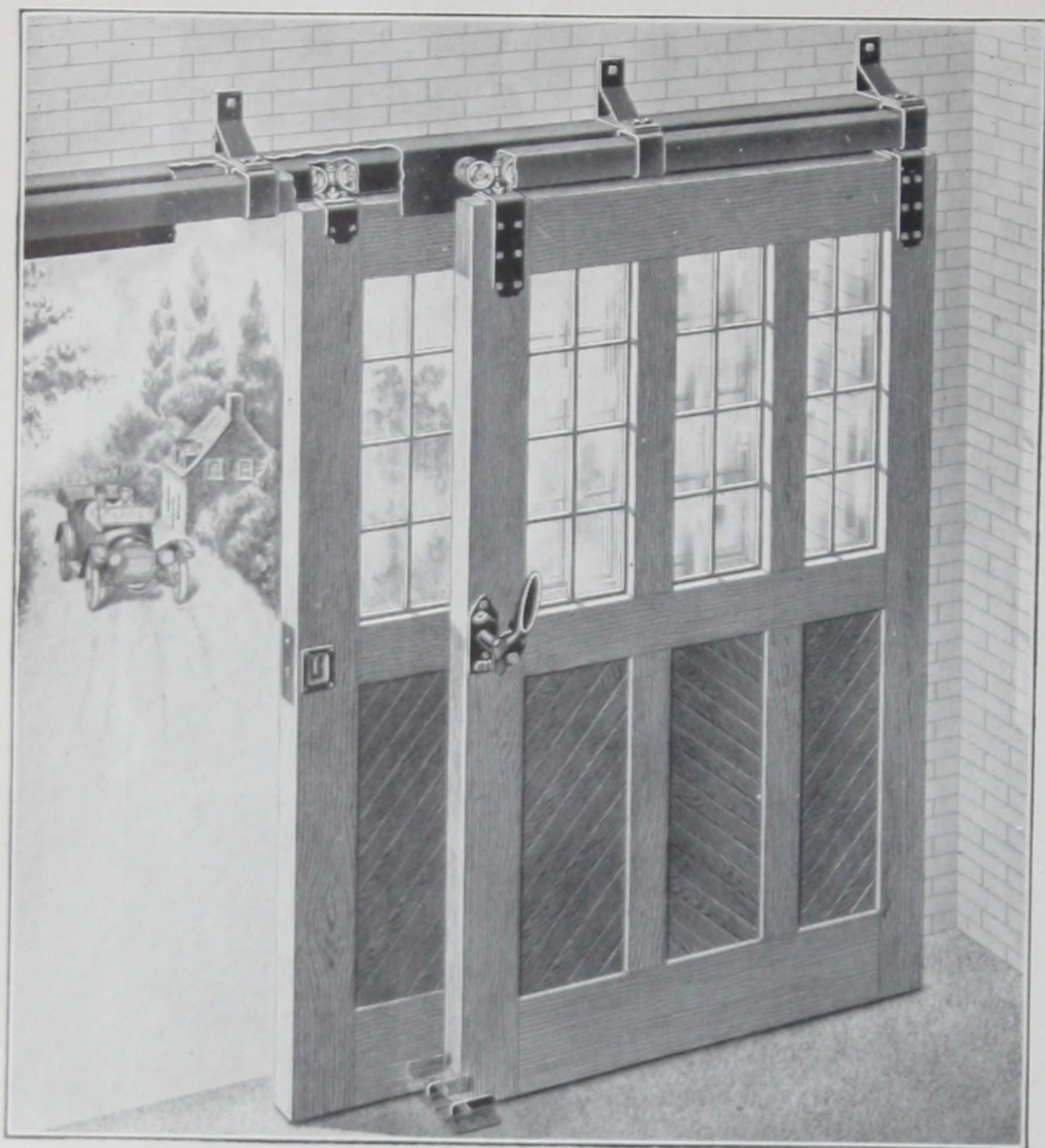
NOTE—If desired, use No. 736 or No. 737 R-W Floor Guide and Weather Strip in place of No. 54 guide roller, No. 171, 271 and 272 floor guides.

NOTE—If any of the above hangers are to operate on curved trolley track, add the word "knuckle-joint" to above numbers in your specifications.

Side, ceiling, or special brackets furnished as needed.

On heavy doors brackets should be spaced not to exceed 24-inch centers.





SHOWING APPLICATION OF TROLLEY HANGERS
TO PARALLEL DOORS

Illustration shows the application of R-W Ball-Bearing Garage Door Hangers to parallel sliding doors. Double side brackets are bolted through wall or secured with expansion bolts. Where triple brackets are used for three parallel doors, ceiling brackets are preferable. We can make special brackets, extension rods, etc., to suit your detail. Allow a spacing of 12 inches between ceiling joists and door lintel where double side brackets are used.

For Completely Equipped Parallel Doors.

Hangers (page 7), and Parallel track with weather strip. No. 172 Parallel Door Floor Guide.

No. 516 R-W Parallel Door Bolt for bolting doors together at center.

No. 525 or 510 Lock, to lock door to jamb.

No. 272 Floor End door stops.

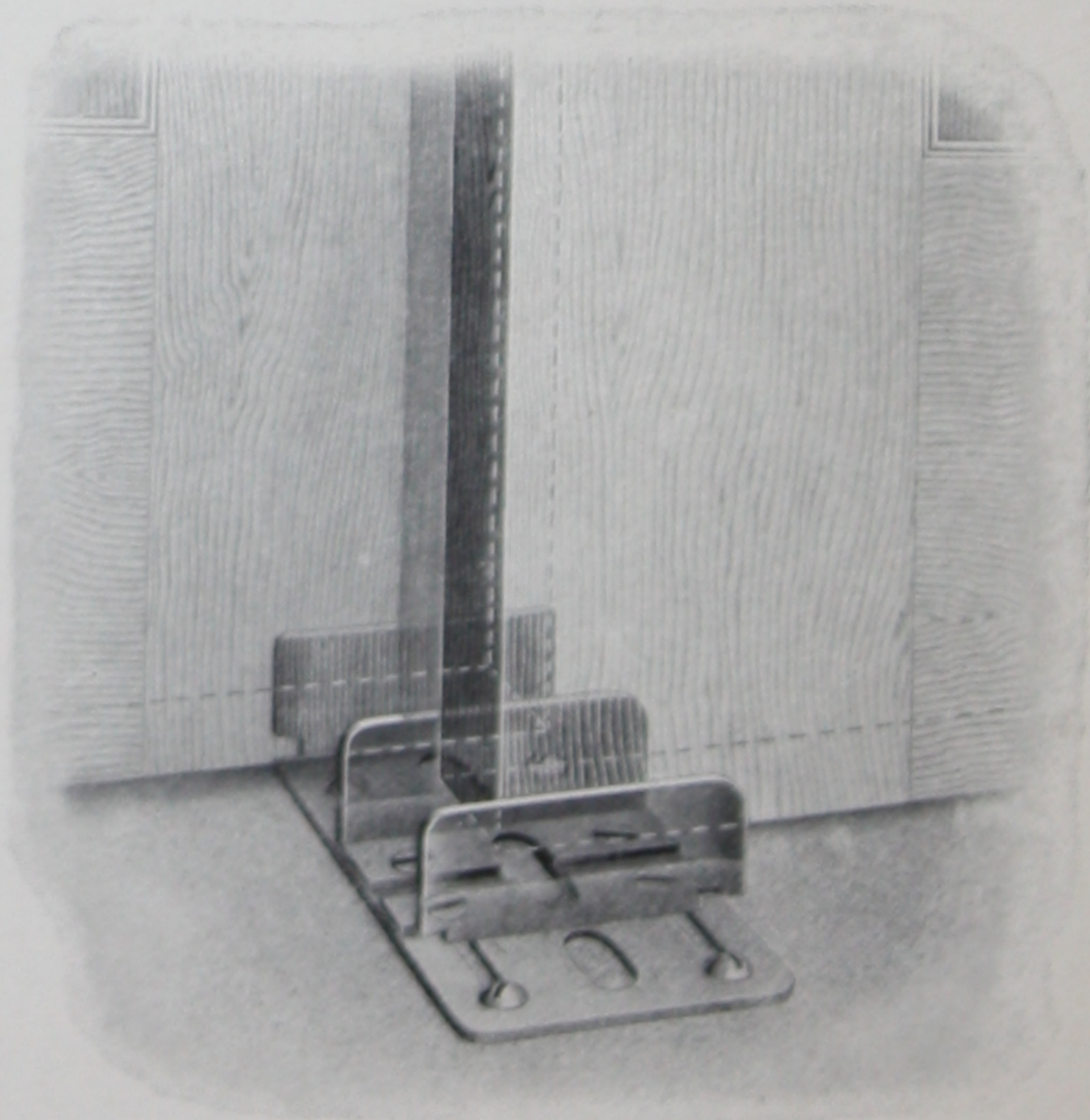
NOTE—If desired, use No. 736 or No. 737 R-W Floor guide and weather strip instead of No. 172 floor guide and No 272 Floor and Door Stops.

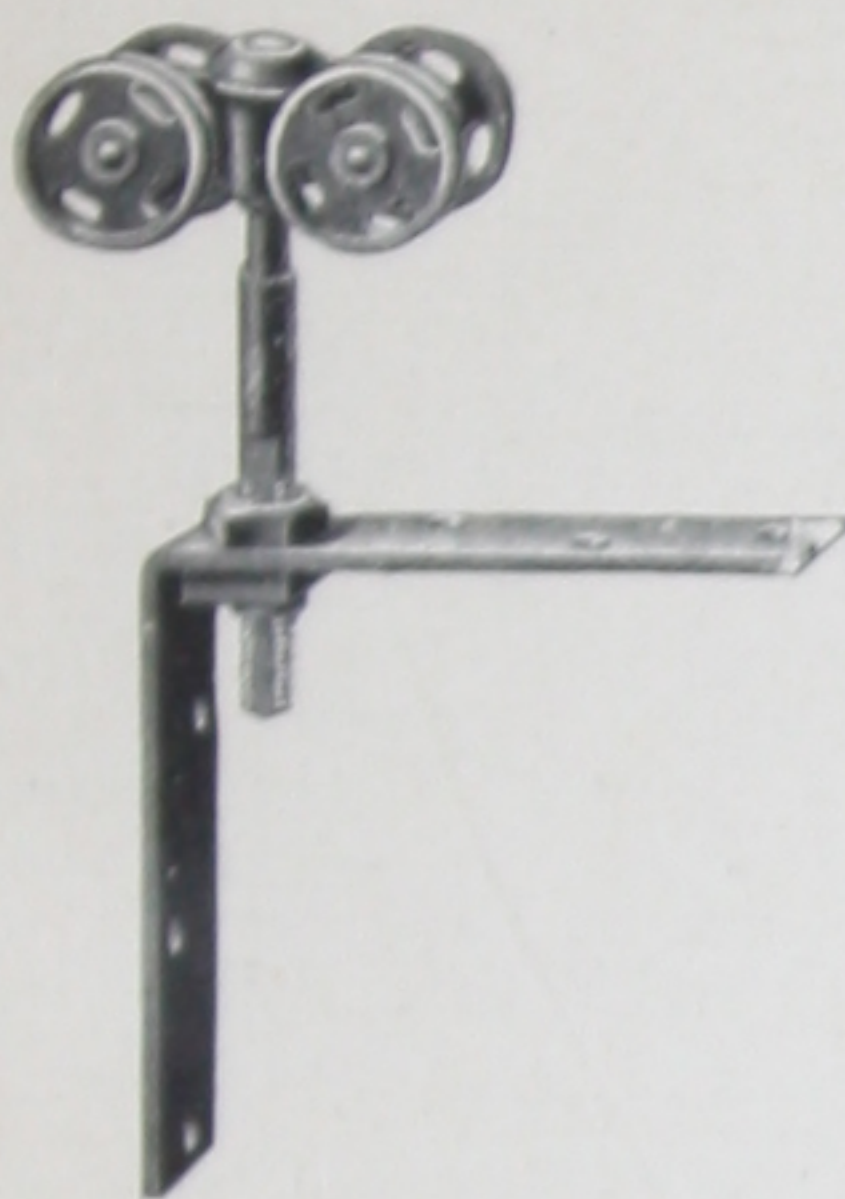
No. 172 R-W Adjustable Parallel Door Floor Guides

For use with parallel sliding doors. Guides the bottom of the doors and prevents chafing.

Suitable for use with concrete or wood floors.

Adjustable for doors $1\frac{3}{4}$ in. to 3 in. thick.

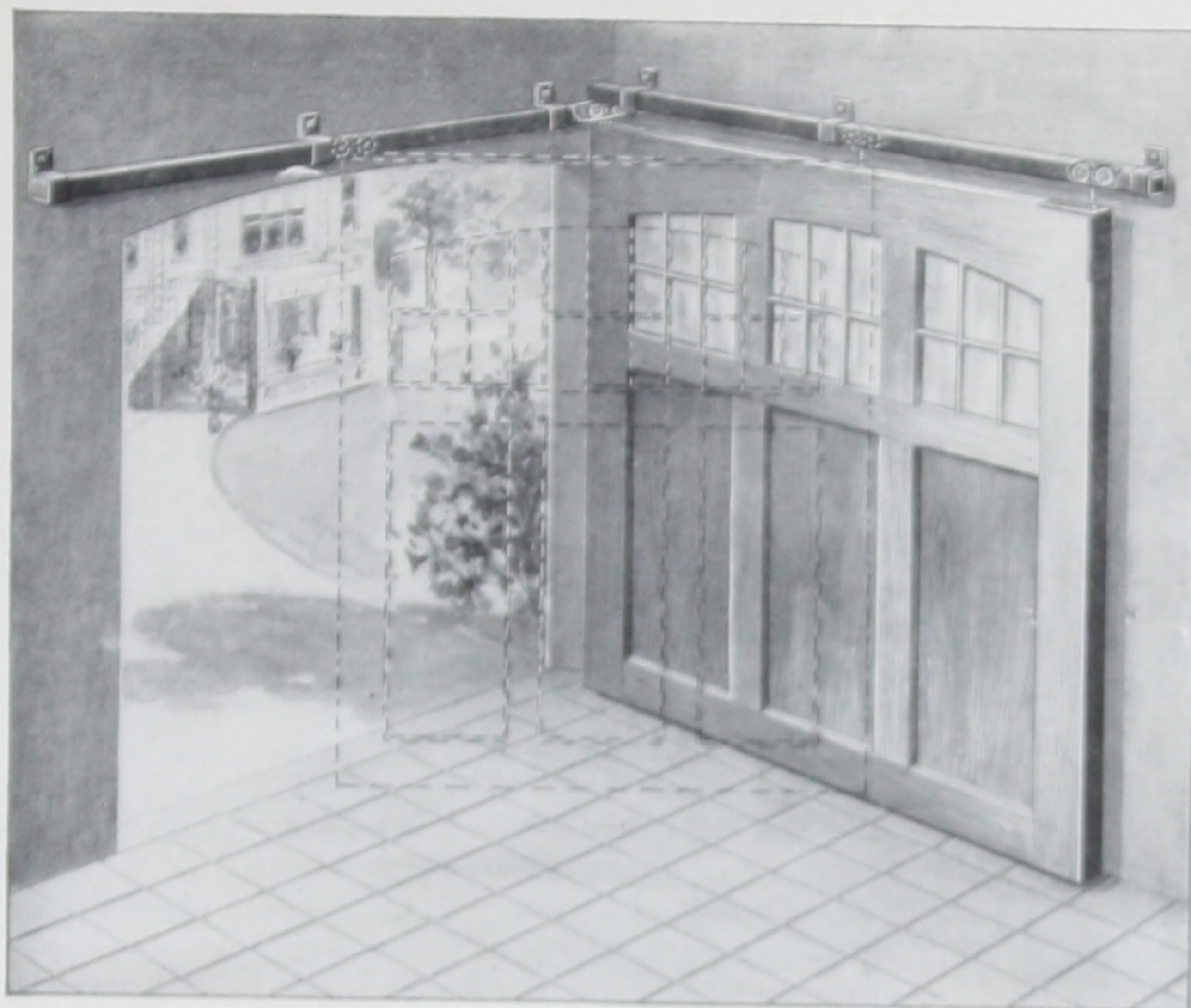




No. 235-11 and 12
Four-Wheel Hanger



No. 235-5 and 6
Four-Wheel Knuckle
Joint Hanger



This shows the use of Richards-Wilcox No. 235 Ball-Bearing Hangers, where for lack of room right angle doors are advisable. Hangers have vertical adjustment; metal wheels.

For door to lay close to jamb, track over opening has to be slotted part way through at point where pendant of rear hanger on door comes, when door is in closed position.

For doors $1\frac{3}{4}$ -2 inches thick use No. 31 Trolley Track

For doors $2\frac{1}{4}$ -3 inches thick use No. 33 Trolley Track

No. 235-1 —Four wheel-hanger for No. 31 Track

No. 235-11—Four-wheel hanger for No. 31 Track

No. 235-2 —Four-wheel hanger for No. 33 Track

No. 235-12—Four-wheel hanger for No. 33 Track

No. 235-3 —Two-wheel hanger for No. 31 Track

No. 235-4 —Two-wheel hanger for No. 33 Track

No. 235-5 —Four-wheel Knuckle Joint hanger for No. 31 Track

No. 235-6 —Four-wheel Knuckle Joint hanger for No. 33 Track

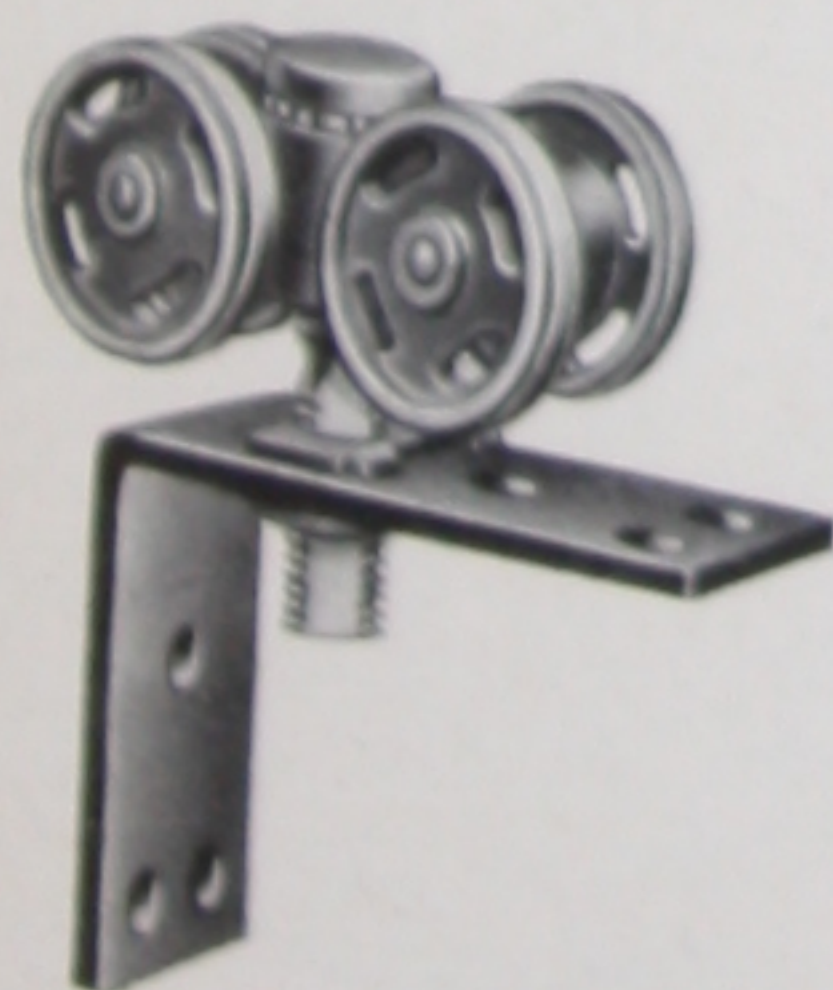
Hangers No. 235, No. 1 and 2 furnished Knuckle Joint for ends of door when used on curved track. Hangers No. 235 No. 5 and No. 6 used only on hinged doors over joint.

Directions for ordering No. 235 Outfits—Give size of opening, if one or two doors. Distance doors lap on jambs. Distance between jamb and wall. State thickness of doors. If double doors, do they slide right and left as Fig. 1, Page 2, or both one way as Fig. 8, Page 3. Always send sketch of floor plan with above dimensions inserted.

For completely equipped doors specify:

Hangers, track and brackets needed.

When desired for use on double doors specify for each door one four-wheel truck for outer end of door and one two-wheel truck for inner end (where doors meet at center of opening). As track at side wall is set on track above opening, the outer end hanger has extra long pendant.



No. 235, 1 and 2
Four-Wheel Hanger

Two No. 272 R-W Adjustable Floor End Door Stops with all single and double doors.

One No. 271 R-W Adjustable Floor Center Door Guide with all pairs of doors.

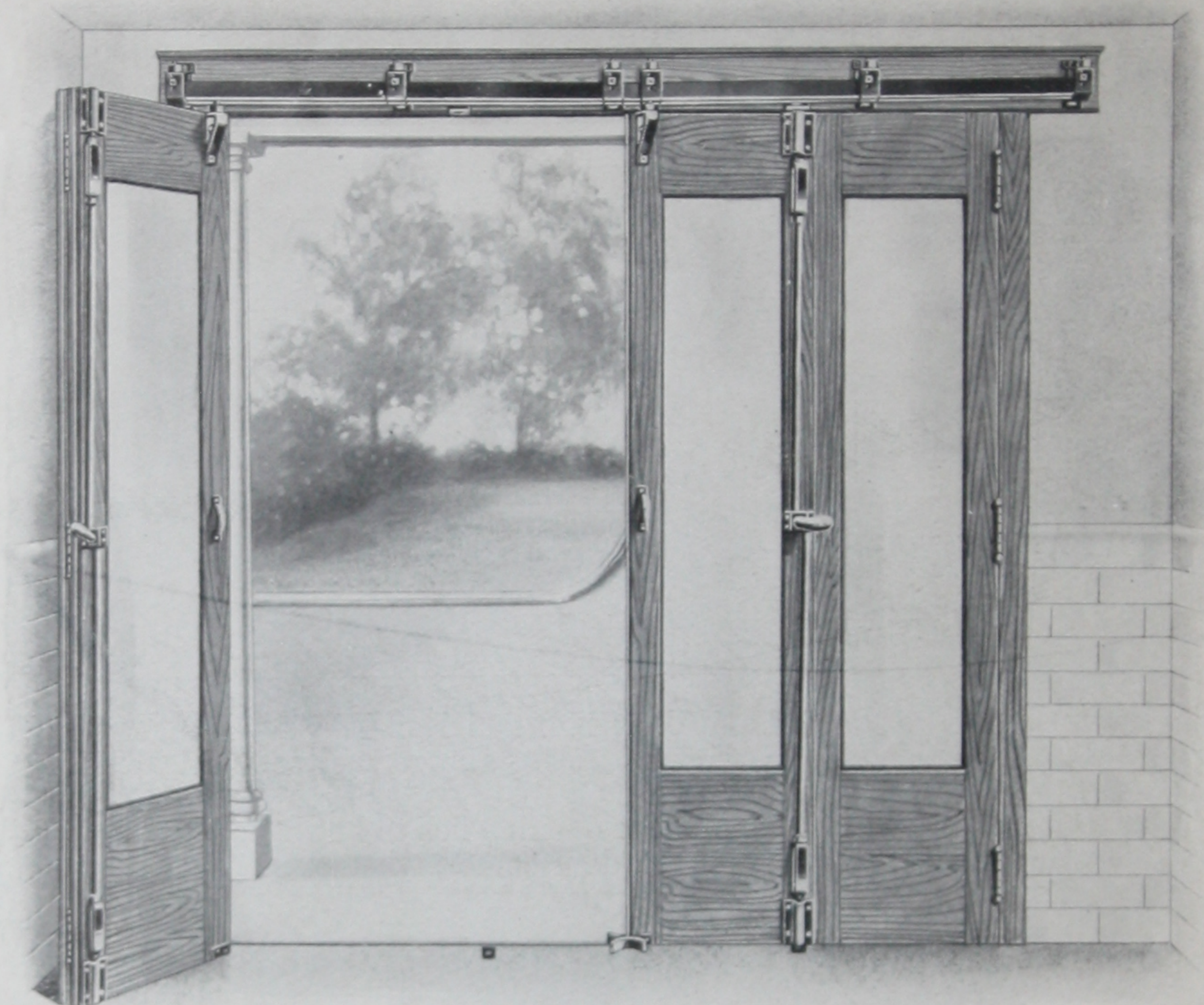
No. 525 R-W Faultless Sliding Door Lock, for locking door from out-side.

No. 516 or 517 Door Bolts to lock doors from inside.

Two Flush door handles.



No. 235, 3 and 4
Two-Wheel Hanger



The No. 435 R-W Sliding Folding Garage Door Roller-Bearing Hanger, designed to meet the demand for a fixture that will allow hinge doors to fold and swing inside of building requiring only minimum space.

Not recommended for doors over 3 feet in width.

Four doors hinged together in pairs are required for each opening, one pair folding to the right and the other to the left side.

A swivel hanger is attached near the edge of the doors which meet at the center of the opening. These hangers operate in tracks which are set at an angle with the front wall, the outside end being the farthest from the wall. Doors may be hung to stand at any angle with the front wall to suit the width of wall space adjoining the opening. The distance the hanger is set from the edge of the door determines the angle at which the doors will stand when open.

Directions for ordering—Give width and height of opening, also thickness of doors.

For completely equipped doors specify:

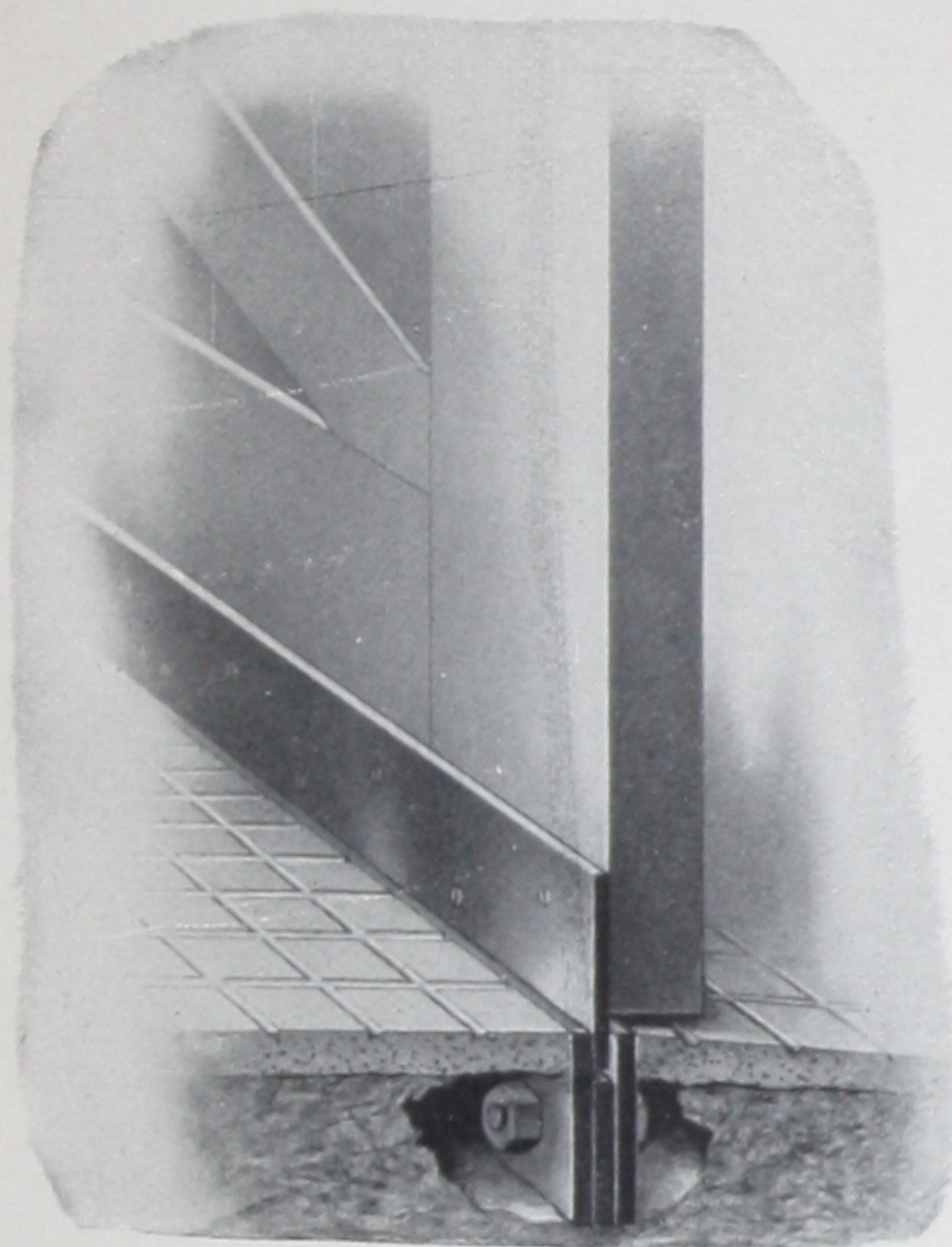
One No. 435 hanger for each pair of doors; No. 31 track and No. 435-C, No. 425-E and No. 435-I brackets needed.

No. 517 R-W Top and Bottom Bolt with each pair of doors.

No. 271 R-W Adjustable Floor Center Door Guide.

Two No. 301-72 Steel Bumper Shoes for each pair of doors.

Two Bow Handles.



No. 736

Richards-Wilcox Sliding Door Guide and Weather Strip

Keeps the Garage Warm—Prevents Warping of Doors—Especially Adapted for Parallel Sliding Doors

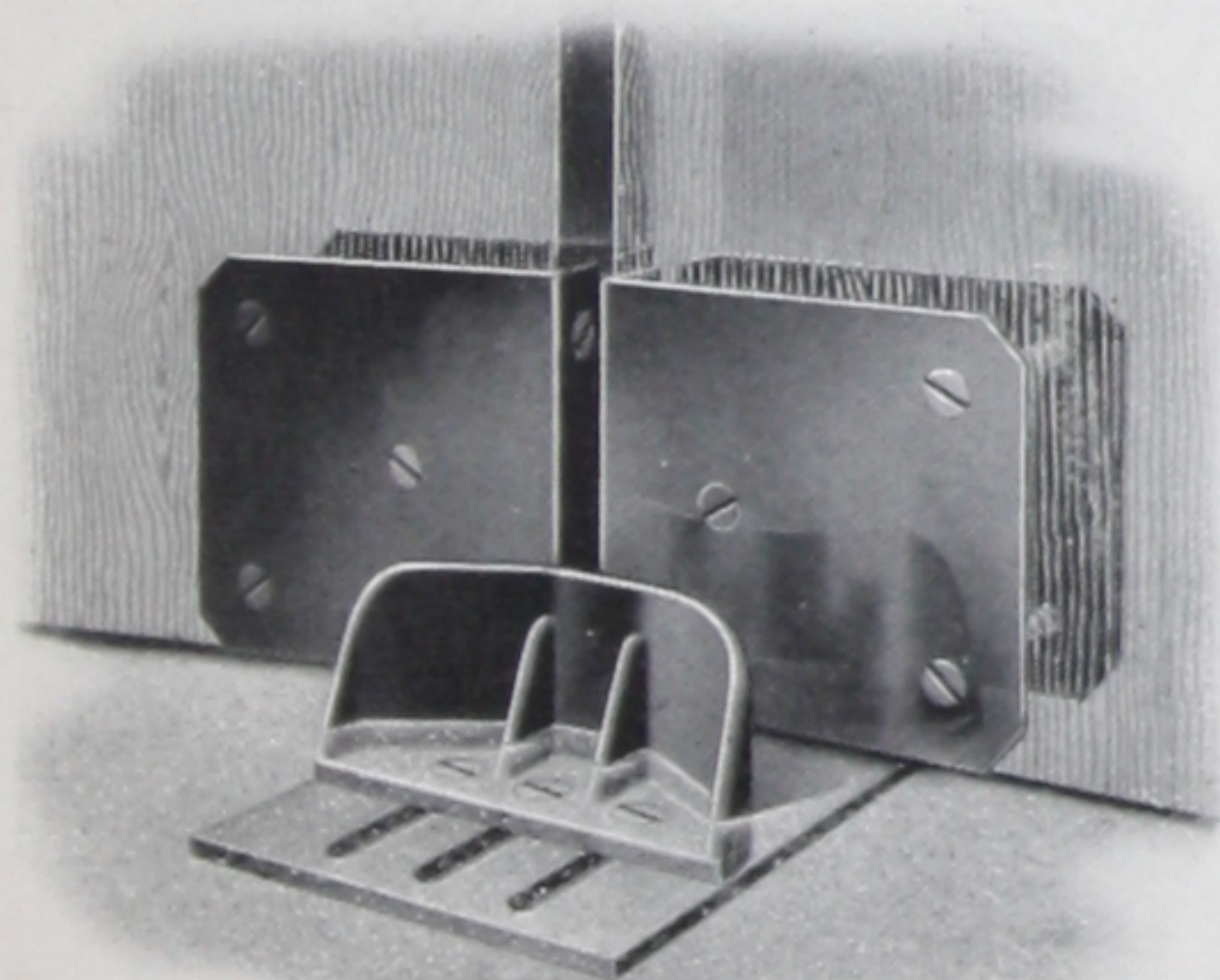
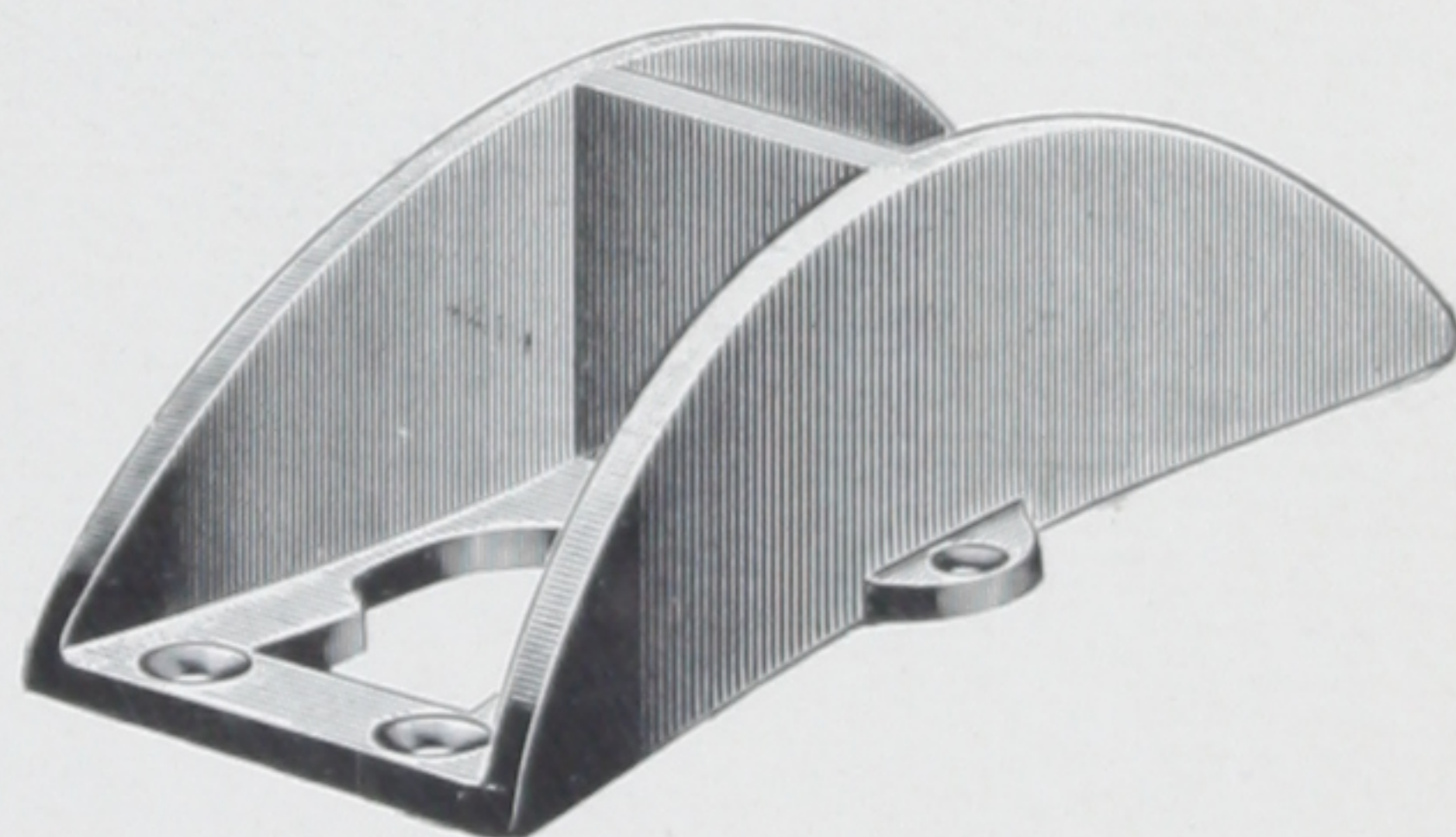
With this construction, door can be hung to clear floor, and the steel strip completely covers and protects the opening, also prevents doors from warping. Opening in lower guide allows water to drain. Especially desirable for parallel doors; prevents their chafing. Made of heavy steel and can be set into concrete or wood floors. Give width of doors and width of opening.

No. 737 Door Guide and Weather Strip same as above but of lighter construction.

No. 171

Richards-Wilcox Cast Floor Stop

Floor stop for use with pairs of doors. Can be fastened to floor or inbedded in concrete. Made in three sizes. State thickness of door.



No. 271

R-W Adjustable Floor Center Door Guide

Showing No. 301-72 Steel Bumper Shoe.

For use with pairs of sliding garage doors. Guides the bottom of doors and holds same in place when closed.

Suitable for use with concrete or wood floors. Adjustable for doors $1\frac{3}{4}$ to 3 inches thick.

No. 272

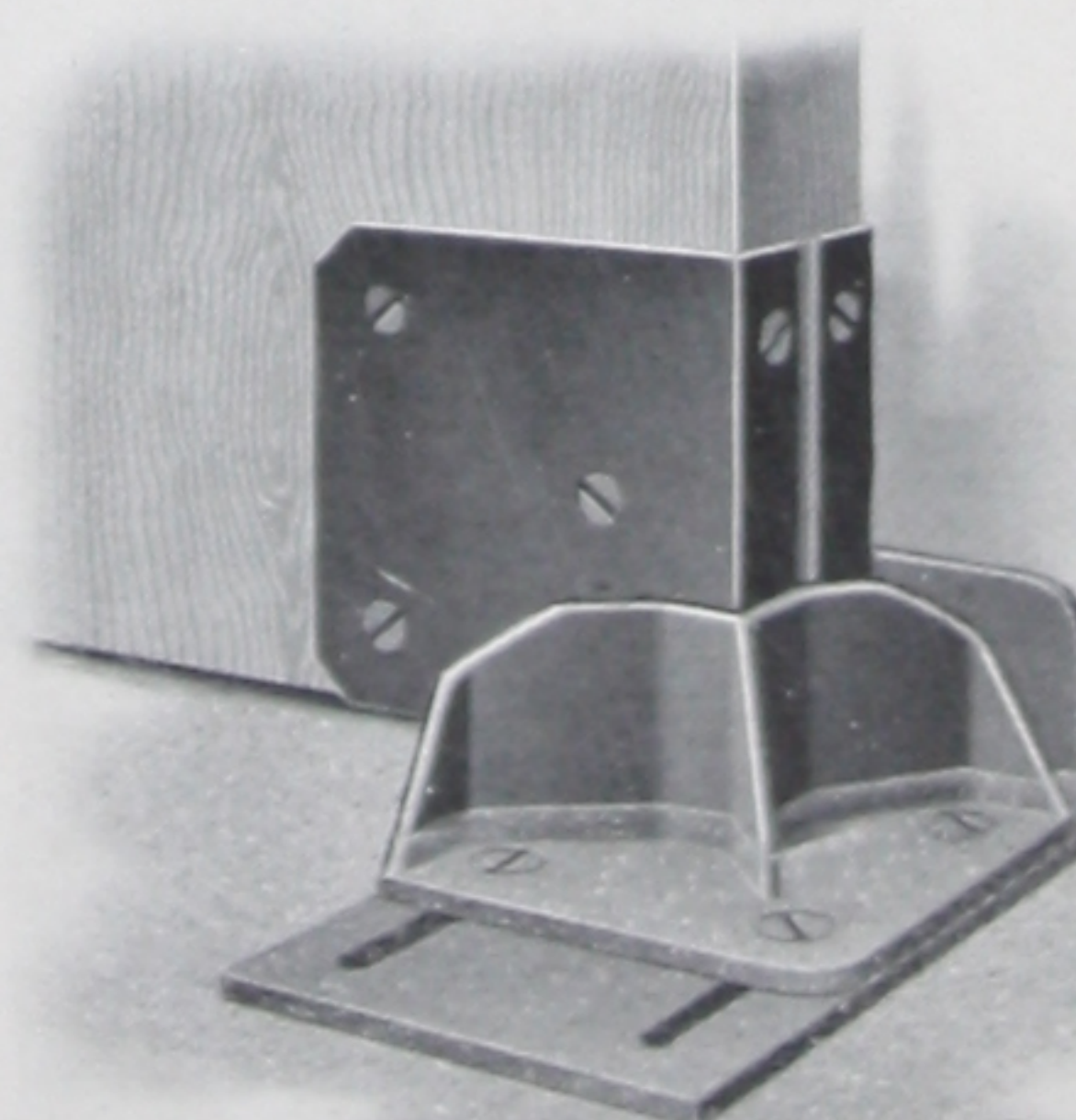
R-W Adjustable Floor End Door Stop

Showing No. 301-72 Steel Bumper Shoe

For use with sliding right-angle garage doors. Holds the bottom of doors in position when either opened or closed.

Suitable for use with concrete or wood floors.

Adjustable for doors $1\frac{3}{4}$ to 3 inches thick.



No. 517 R-W Top and Bottom Bolt for Garage Doors

MADE IN TWO SIZES

Locks doors at both top and bottom with one movement of lever handle.

So constructed that when bolted or unbolted the ends of connecting rods, where attached to the lever handle are off center so that bolt maintains its position by gravity and cannot be changed except by moving the lever handle.

Made in two sizes and adjustable for doors of various heights. No. 1 for doors from 7 to 8 ft. high. No. 2 for doors 8 to 9 ft. high. Furnished for other height doors if required. Adjustment is positive and is securely locked. Suitable for use on inside of building.

Packed regularly with screws, sill and lintel plates for hinged doors swinging out. Finish black enamel. Weight, No. 517-1, $8\frac{3}{4}$ lbs., No. 517-2, $10\frac{3}{4}$ lbs.

Special adjustable top keepers shown in Fig. 1 to 5 extra when required, suitable for the following installations.

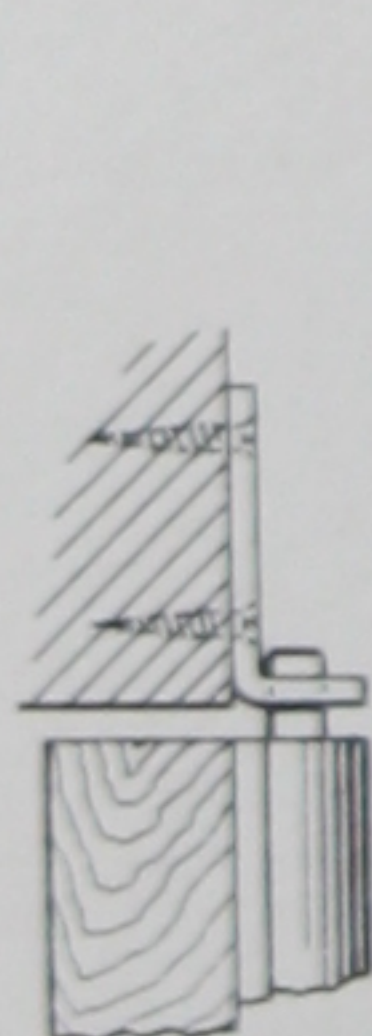
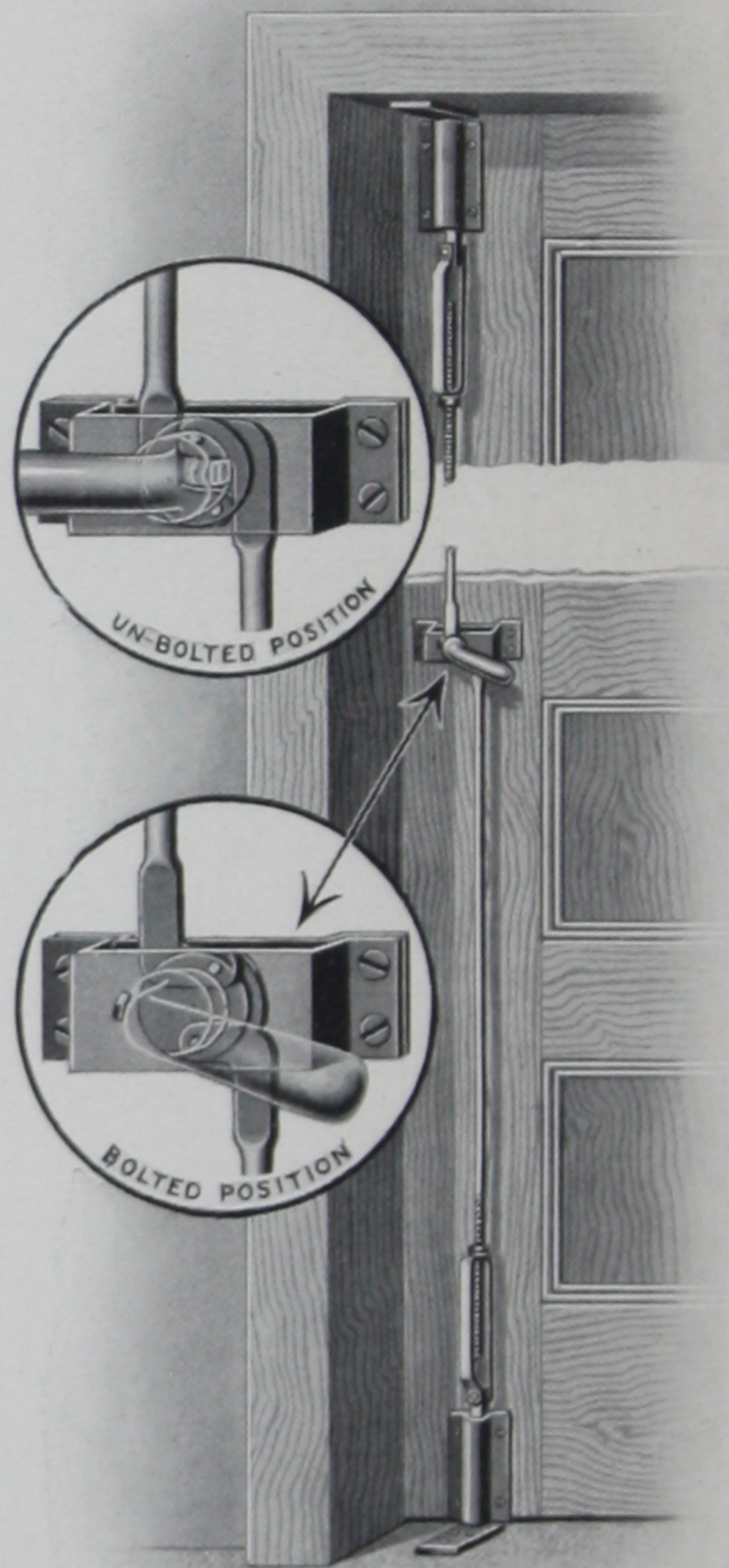
Fig. 1—Hinged flush door swinging in.

Fig. 2— $1\frac{1}{2}$ in. to $1\frac{3}{4}$ in. lap hinged doors swinging in; for right angle door using No. 31 track or sliding doors using No. 31, 32 or 232 track.

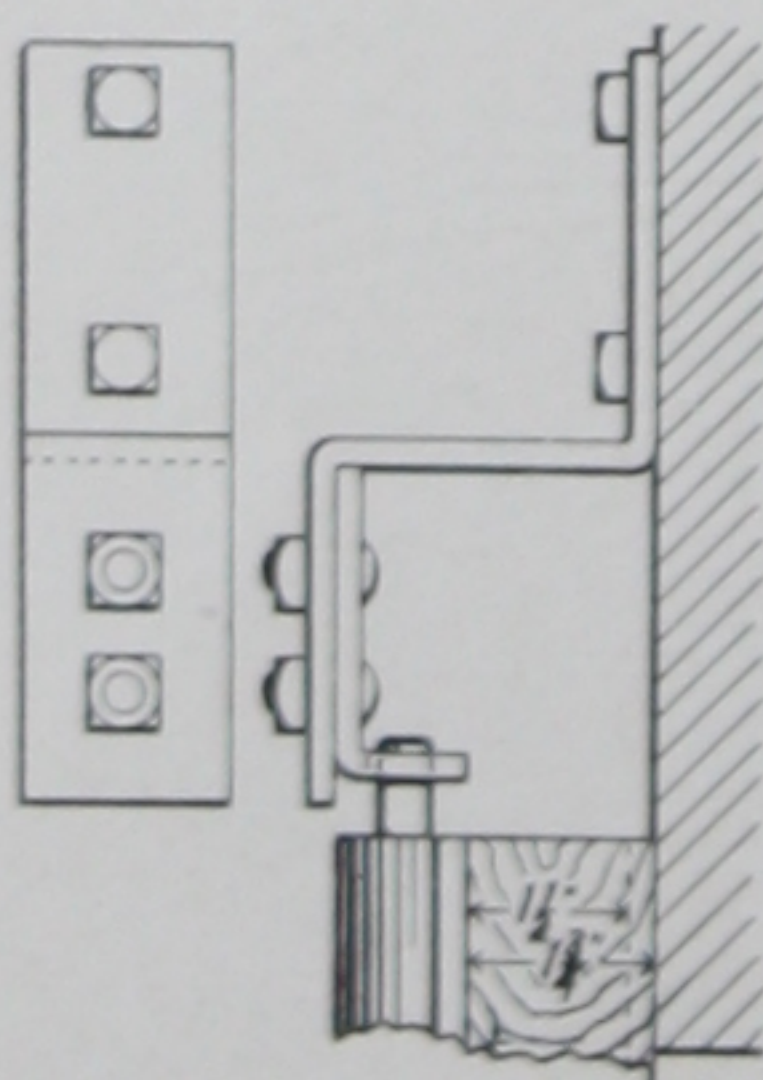
Fig. 3—2 in. to $2\frac{1}{4}$ in. lap hinged doors swinging in; right angle or sliding doors, any track.

Fig. 4— $2\frac{1}{2}$ in. to $2\frac{3}{4}$ in. lap hinged doors swinging in; right angle or sliding doors using No. 31, 32 or 232 track.

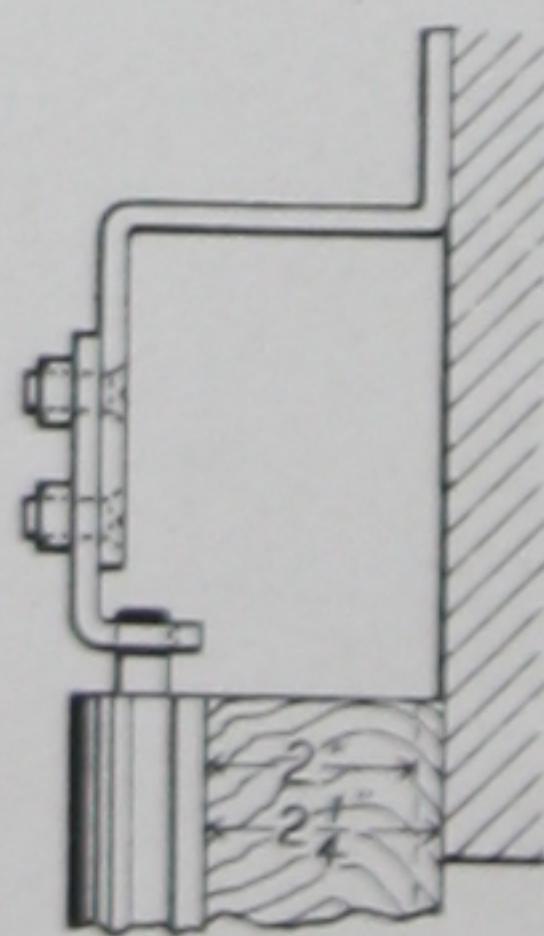
Fig. 5—3 in. to $3\frac{1}{4}$ in. lap hinged doors swinging in; right angle or sliding doors using any track.



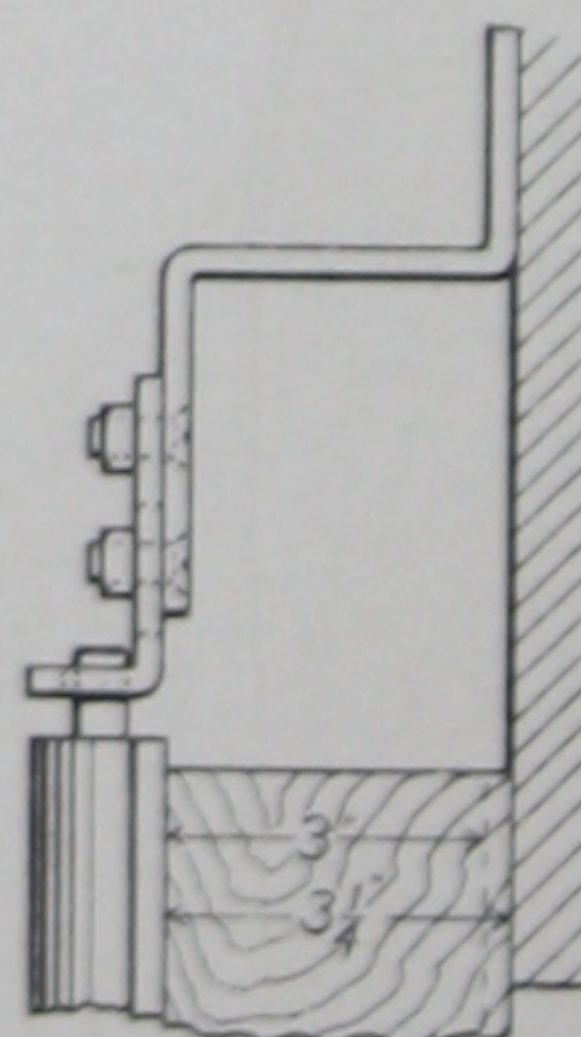
No. 1



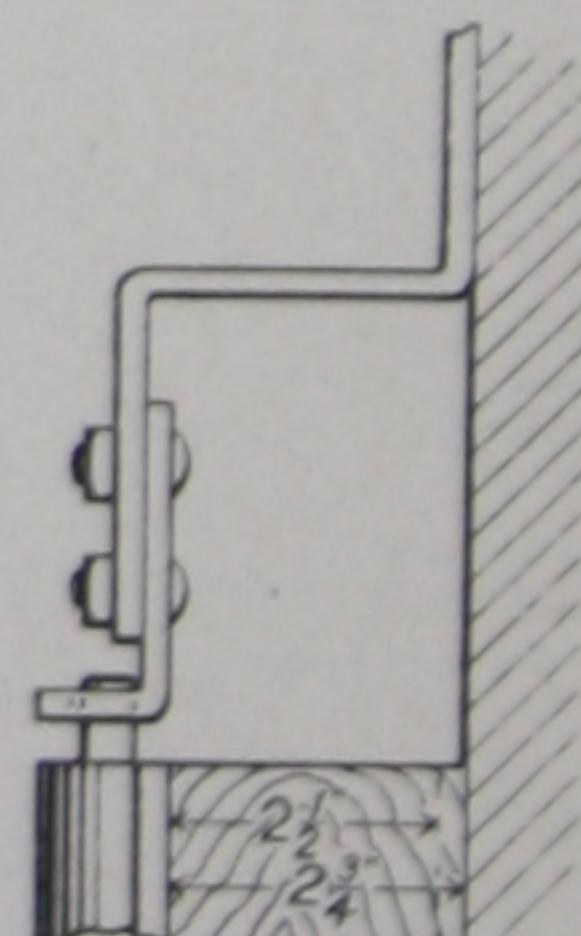
No. 2



No. 3



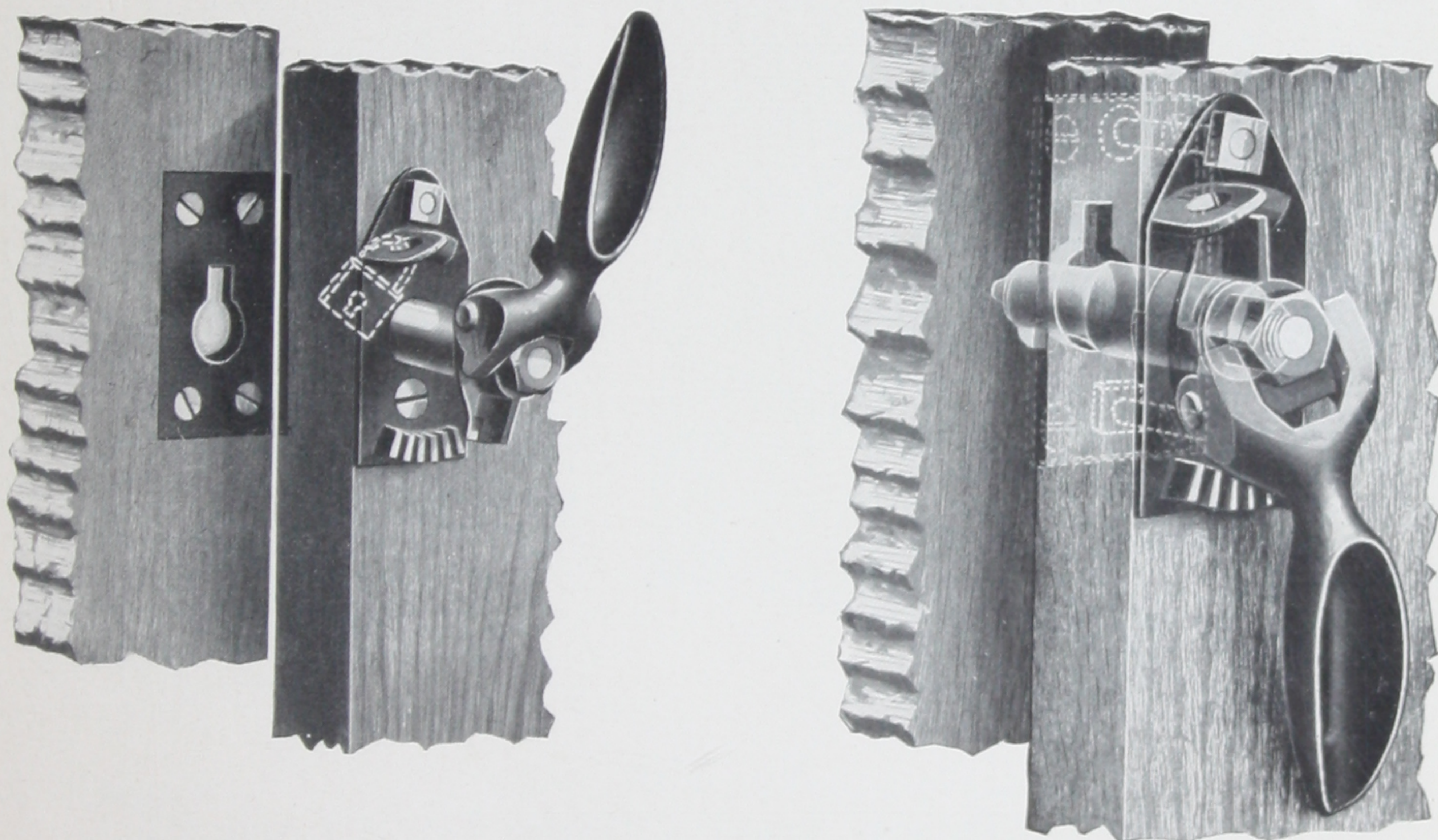
No. 4



No. 5

No. 516

R-W Parallel Garage Door Bolt



Most satisfactory locking device for parallel garage doors.

Designed especially for garage doors operating on parallel track, but may be used on single doors by inserting keeper casting in the jamb on side wall.

This bolt can be used with No. 235 Single Garage Doors.

Lock is inserted in the stile of door, the key or bolt passing entirely through the stile of door on the inside track and into the keeper in the stile of the outside door. When used with single door, this bolt passes into the keeper inserted in the jamb.

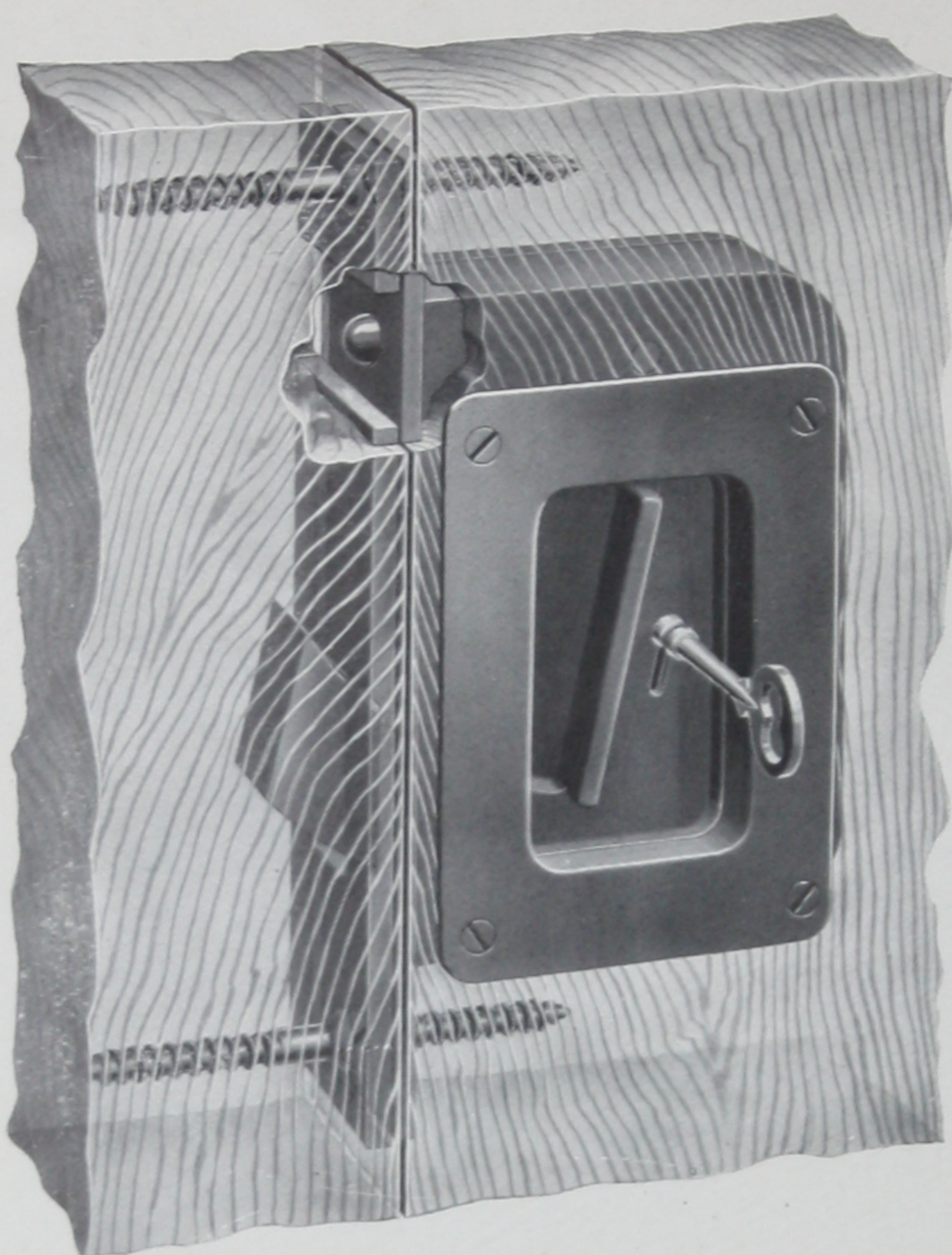
By turning the handle, doors are drawn together and held in that position by a stop lug resting in a notched section on the lock plate. This prevents turning of bolt or same being removed or doors opened.

When used on the outside of building, a pad-lock can be attached, thus providing a combined bolt and lock.

Doors should lap each other or jamb at least two inches.

Made of malleable iron and steel.

Suitable for doors $1\frac{3}{4}$ to 3 inches thick.



No. 525

R-W Sliding Door Latch

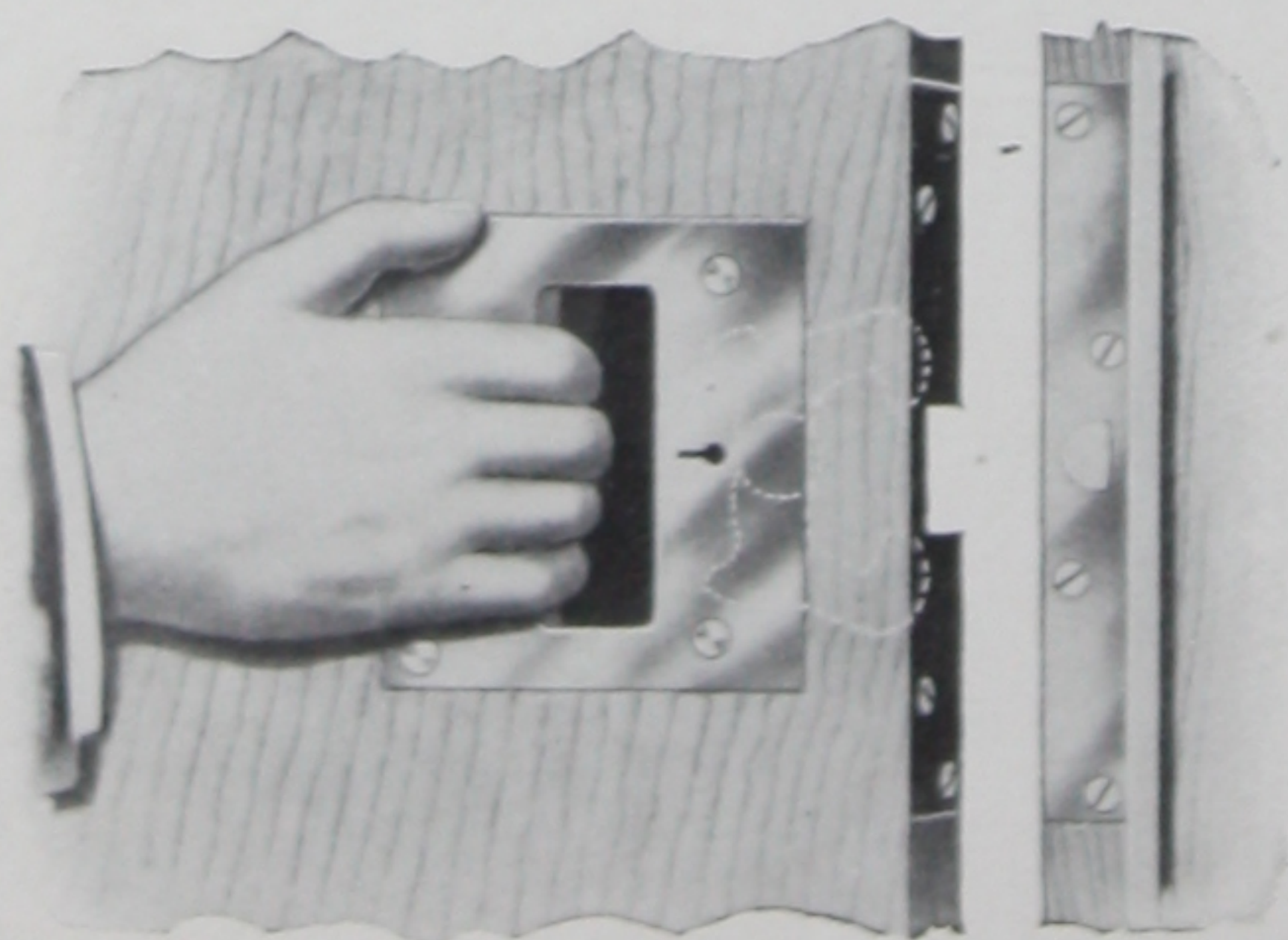
For sliding doors $1\frac{3}{4}$ inches thick or thicker. Thirty-three changes of keys. Mortise type. Lock, latch and flush door pulls combined. Operated from either side of door. For single or double doors. Latch piece and trip made of malleable iron. Steel flush cups. Steel keeper plate. Latch is released and door pulled open by same movement. Mortise case is $4\frac{3}{4}$ inches high x $3\frac{3}{4}$ inches wide x $\frac{7}{8}$ inch thick. Finish, black. Weight $3\frac{1}{2}$ lbs. Packed one lock in metal edged paper carton, complete with screws and templet for setting lock.

No. 510

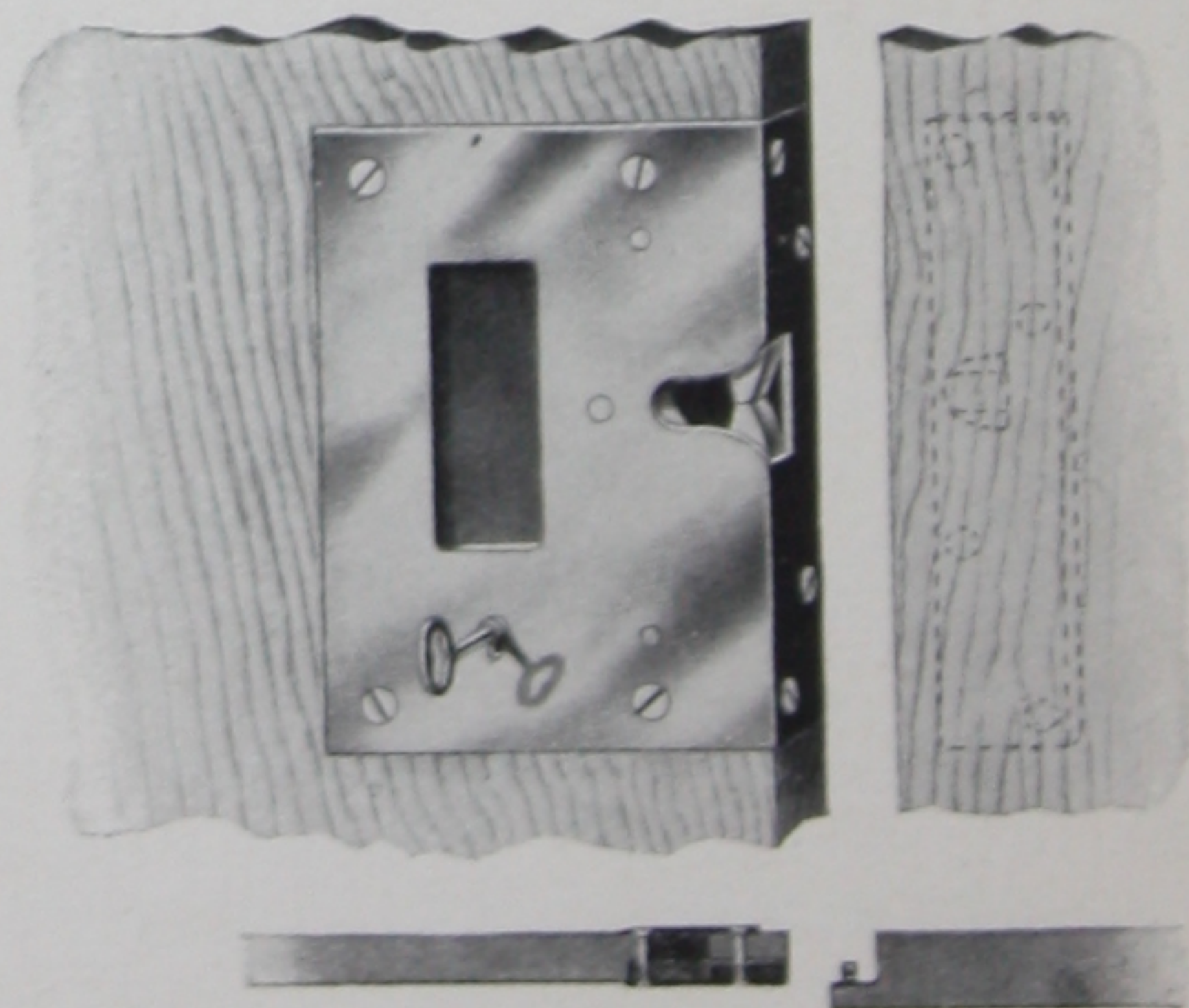
R-W No-Break Steel Sliding Door Lock

Lock, Latch and Door Pull Combined in One

Width of lock $5\frac{1}{8}$ inches. Especially adapted for garage doors; adjustable for doors $1\frac{3}{4}$ to $2\frac{1}{2}$ inches thick. No projections on which to catch harness or clothing. Made for both single and double sliding doors. On panel doors outer stiles should not be less than 6 inches wide. R-W No-Break is furnished in dead black finish, antique copper plated and solid brass, polished.



Inside View



Outside View



No. 013

R-W Gentleman Grindstone

Stone $1\frac{3}{4} \times 14$ inch best quality Berea Grit. Tubular steel legs. One piece grey iron water pan with drain cock. Ball-bearing journals with dust shields. Wide pedal which can be operated with one foot when standing or both feet when sitting. Counterweighted crank so it will not stop on dead centers. Adjustable tool rest and drip tray, draining back into water pan.

Shipped knocked down and securely crated.

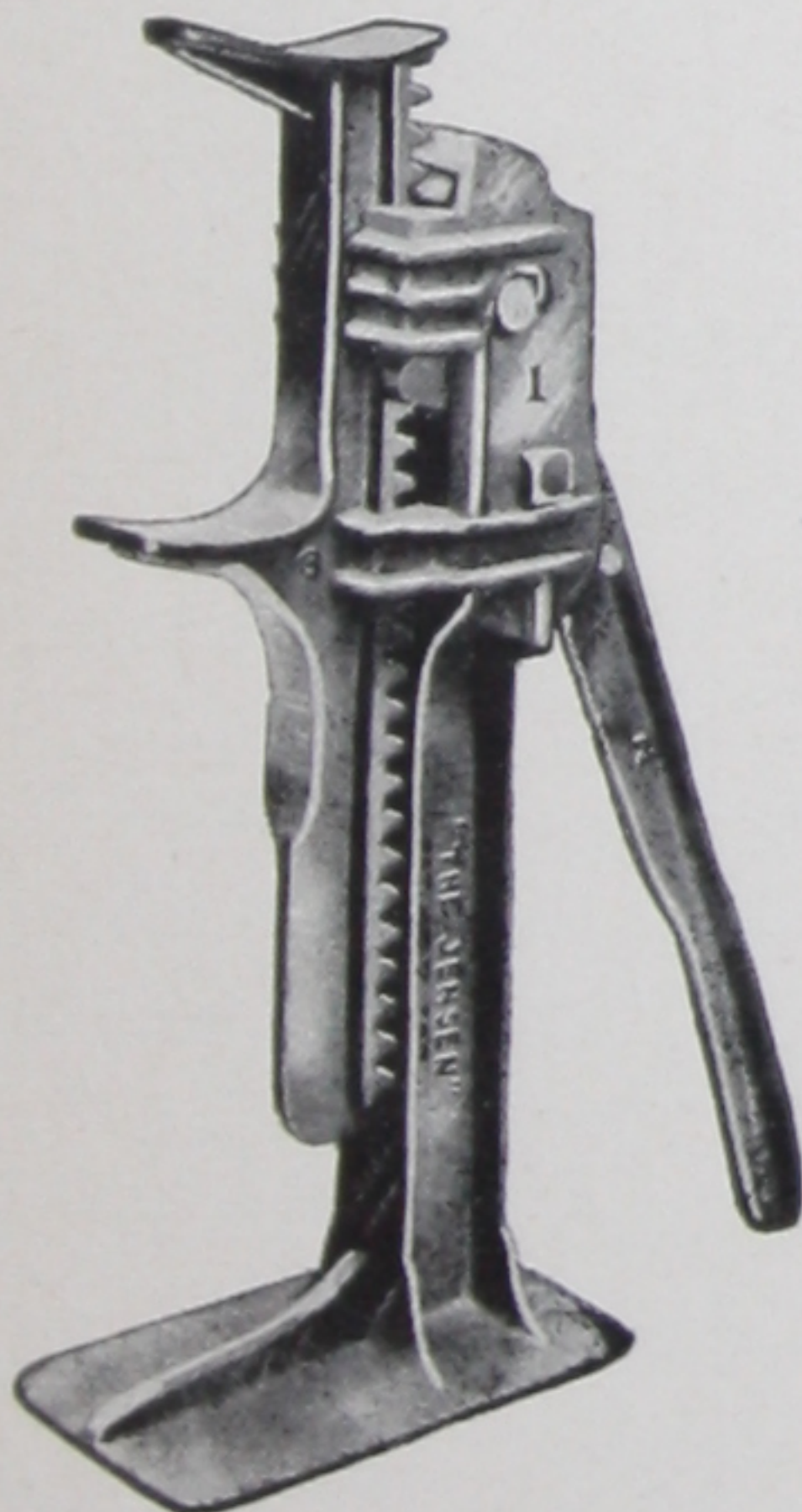
Finish, black japan.

Shipping weight 70 pounds.

No. 328



Auto Jacks



Patented April 6, 1912

Most auto jacks have one particular strong feature. Such jacks are fairly good, but have weak points. Some are not positive in operation. Some complicated with a large number of parts to easily get out of order. Some are heavy and bulky, and require too much space in tool box.

An auto jack is just as strong as its weakest point—not its strongest.

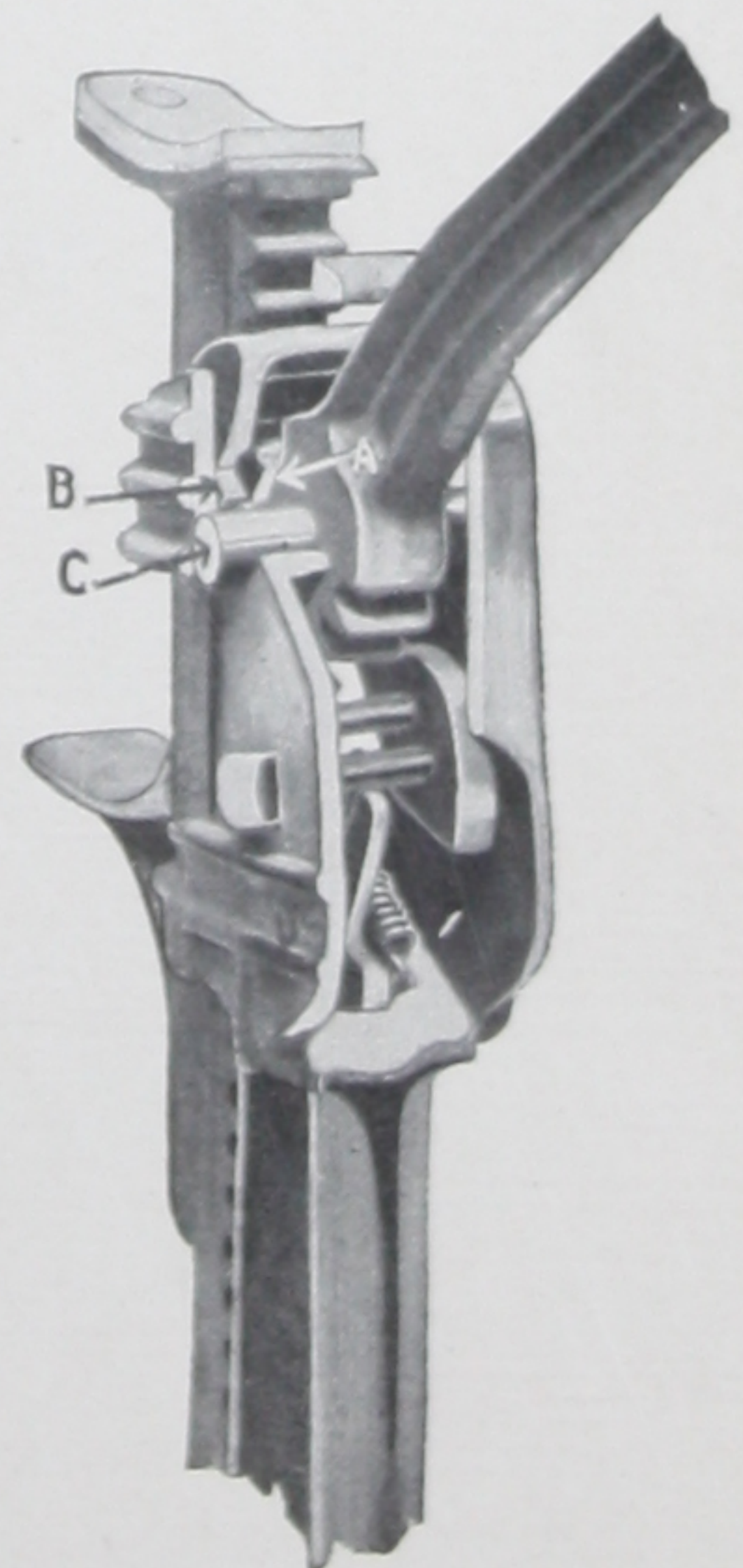
There are no weak points in the Union.

In the first place it is composed of only five malleable iron pieces while other jacks have twice this number of castings. This is why the Union is so much more simple in construction—easy and sure in operation—why it is light in

weight—so handy and so neat in appearance.

The Union gives better and longer service than any other jack on the market.

Foot of jack is extra large and lifting bar is equipped with two lift brackets for use on high or low cars, or when cars are sunk in mud. Height of first lift bracket in low position is $7\frac{3}{4}$ inches; height of second lift bracket in low position is 12 inches; lift, $6\frac{1}{2}$ inches.



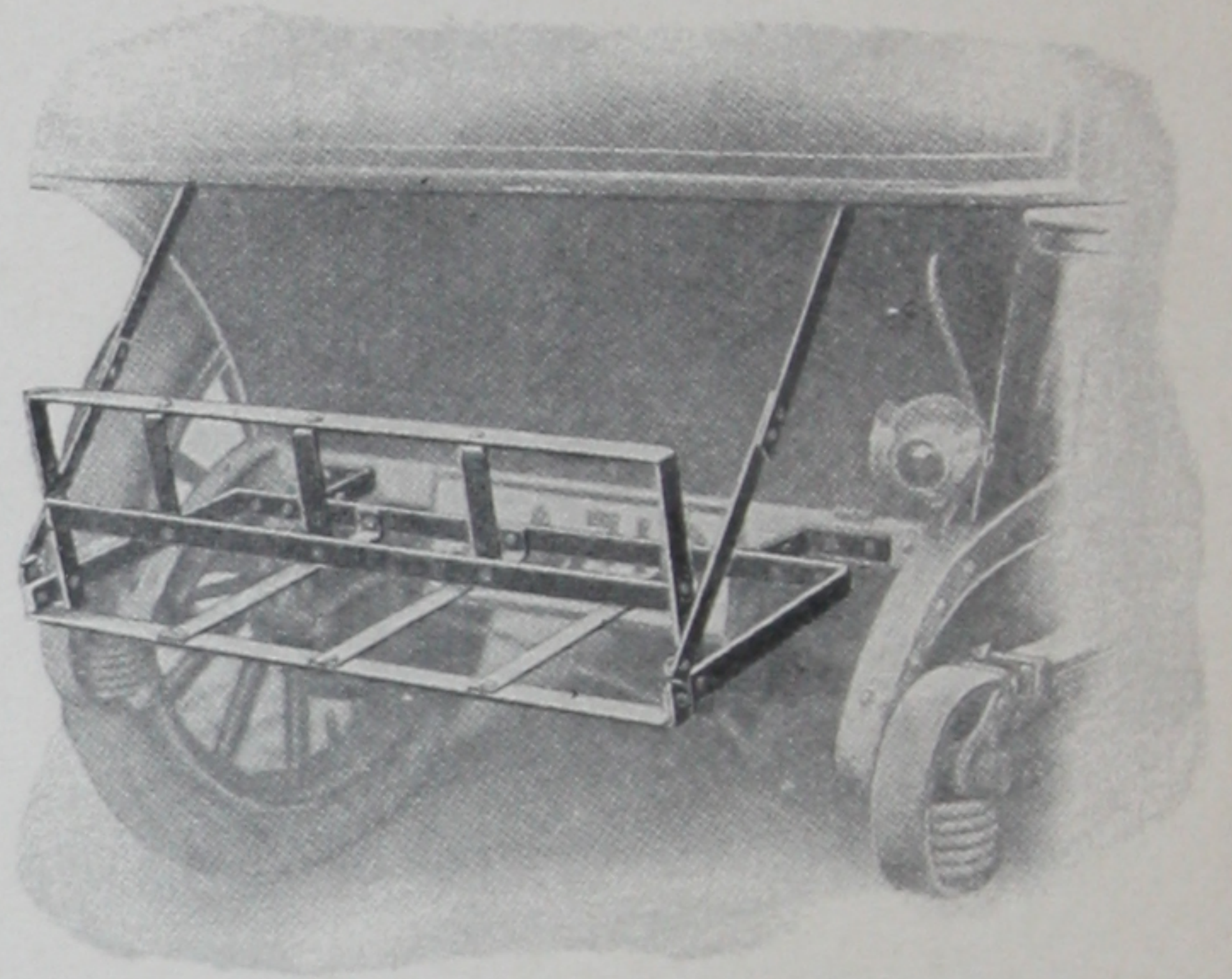
Sectional View

Nos. 244 and 245 R-W Steel Folding Luggage Carriers

For Trunks, Suit Cases and Packages

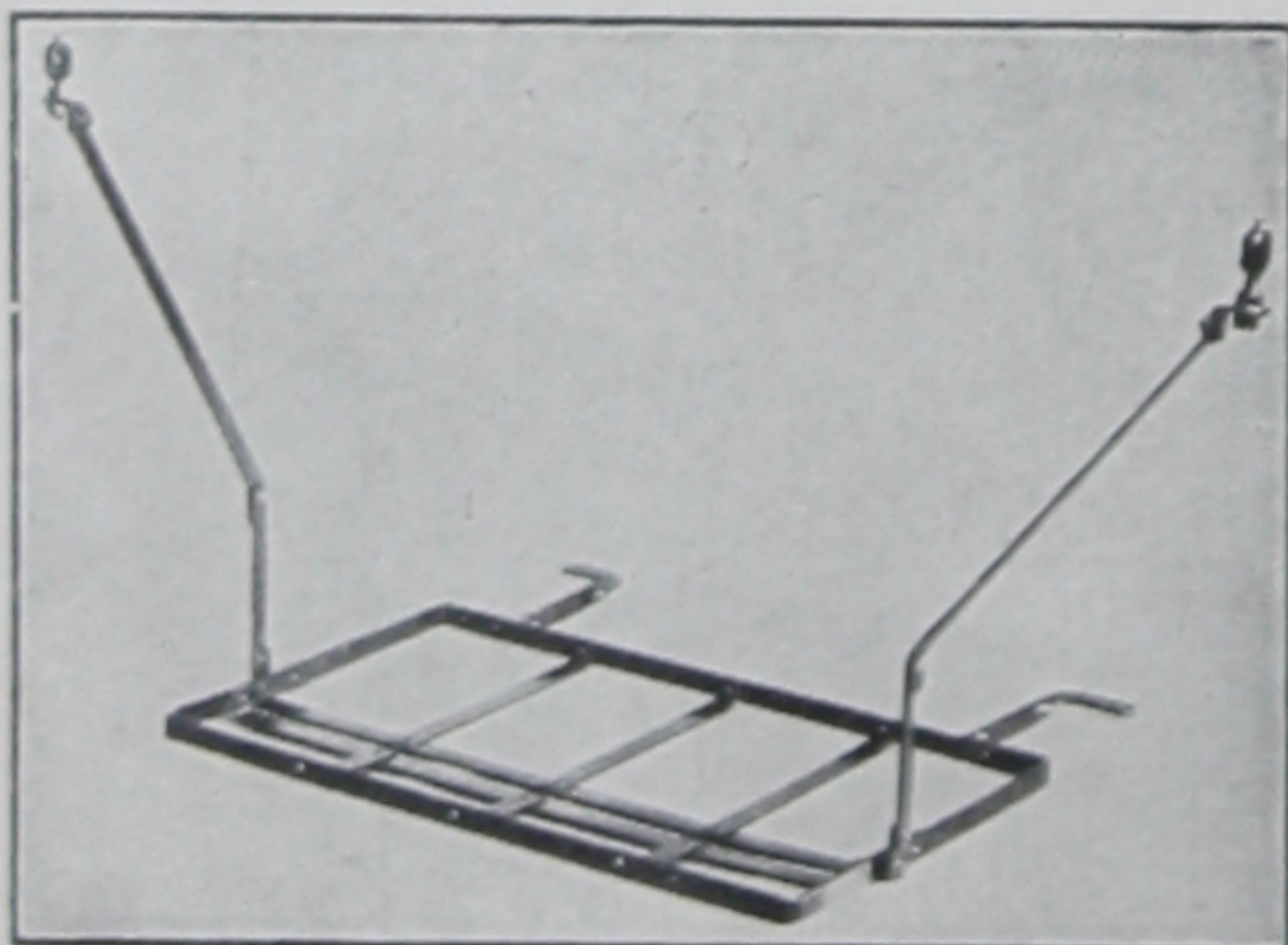
Easily attached to any car and made entirely of steel. Furnished in black baking Japan finish. View in cut above shows carrier folded to receive suit case or small packages. To hold a trunk carrier is opened to flat position. Simple, convenient, durable.

Made in three sizes, for 28-inch, 30-inch and 32-inch trunks. Width, open 18 inches; width folded, 12 inches. Weight, No. 244, each 10 pounds; weight No. 245, each, 15 pounds. No. 244 carriers made from $\frac{3}{4} \times \frac{3}{16}$ steel. No. 245 carriers made from $1 \times \frac{3}{16}$ steel. Furnished in black baking japan. Write for prices.



No. 344 R-W Steel Folding Luggage Carrier

For Trunks, Suit Cases and Packages



Manufactured especially for 1913 and 1914 Model Ford Cars. Made entirely of steel and finished in black baked enamel. Simple, convenient and strong. Arms of rack are attached to "gooseneck" rods on which top rests when down. Illustration shows rack open for trunks. When it is desirable to carry suit cases or smaller packages, back of rack may be raised. When not in use rack may be folded against back of car and is out of way entirely.

Made in 3 sizes for 26, 28 and 30-inch trunks. Width open 18 inches. Width with back raised 12 inches.

**A hanger for any
door that slides**
